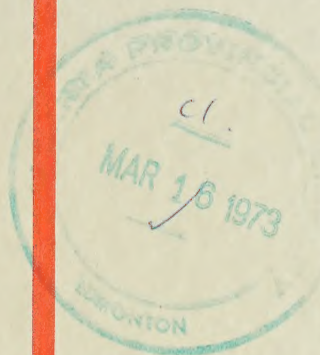


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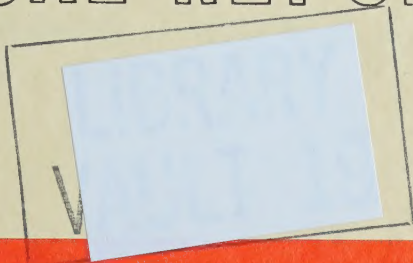
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*Alberta.*

# ENVIRONMENT CONSERVATION AUTHORITY

## ANNUAL REPORT



# 1972





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# **ENVIRONMENT CONSERVATION AUTHORITY**

## **ANNUAL REPORT**

**DECEMBER 1971 — DECEMBER 1972**

**9912 - 107th STREET  
EDMONTON, ALBERTA**

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**ENVIRONMENT CONSERVATION AUTHORITY**

9912 - 107 St., Edmonton, Alberta T5K 1G5  
Tel. (403) 423-2247

L E T T E R   O F   T R A N S M I T T A L

Honourable W.J. Yurko,  
Minister of the Environment,  
207 Legislative Building,  
Edmonton, Alberta.

Sir:

I have the honour to transmit herewith the Second Annual Report of the Environment Conservation Authority as required by Section 7(1)(j) of the Environment Conservation Act (Ch. 125, R.S.A. 1970; S.A. 1972, Ch. 38, Section 6).

I have the honour to be, Sir,  
Your obedient servant,

W.R. TROST,  
Chairman,  
Environment Conservation Authority.



## ACKNOWLEDGEMENTS

The Authority wishes to acknowledge the continuing concerns of government and of citizens in both the private and the public sector who realize the need for a vehicle to facilitate public participation in the formulation of policy in matters relating to the environment.

The support and cooperation received from individuals, organizations, universities, public advisory committees, industry, labour, agriculture and the general public are appreciated. The interaction of these sectors of society has contributed in a meaningful way to the aims and objectives of the Authority.

The Authority is grateful to the members of the public service in all levels of government who so generously volunteered their expertise in many of the complex undertakings.

Special thanks are extended to those who actively participated in presenting their concerns and ideas either through public hearings, public advisory committees, or directly to the Authority. These presentations have assisted in providing a necessary balance among the points of view presented on subjects which have come under discussion.

Finally, the loyalty and dedication of the Authority staff is acknowledged. They have responded in a helpful and enthusiastic manner to the varied tasks assigned to them.

LIST OF PUBLICATIONS

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ENVIRONMENT CONSERVATION AUTHORITY. First Annual Report, November 1970 to November 1971. April, 1972. 101 pages.

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1. PUBLIC HEARINGS ON A PROPOSAL TO RESTORE WATER LEVELS IN COOKING AND HASTINGS LAKES, AUGUST 23, 25, 1971.

AN ECONOMIC ANALYSIS OF THE COOKING AND HASTINGS LAKES. E.P.E.C. Consulting Ltd. June 10, 1971.

RECREATION POTENTIAL AND DEVELOPMENT FEASIBILITY IN HALFMOON, HASTINGS AND COOKING LAKES. Macroplan Consultants Ltd. July - August, 1971.

ALTERNATE LAND USE EVALUATION. Acres Western Limited, August, 1971. 27 pages.

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PUBLIC HEARINGS ON A PROPOSAL TO RESTORE WATER LEVELS IN COOKING AND HASTINGS LAKES. Summary. August, 1971. 64 pages.

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2. PUBLIC HEARINGS ON THE ENVIRONMENTAL IMPACT OF SURFACE  
MINING IN ALBERTA

DECEMBER 13, 15, 17, 21, 1971 and JANUARY 6, 1972

ENVIRONMENTAL IMPACT OF SURFACE COAL MINING OPERATIONS IN ALBERTA. F.F. Slaney and Co. November, 1971. 59 pages. (Reproduced in Proceedings).

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THE IMPACT ON THE ENVIRONMENT OF SURFACE MINING IN ALBERTA. Report and Recommendations. December, 1971, January, 1972. 99 pages.

3. PUBLIC HEARINGS ON THE CONSERVATION OF ARCHAEOLOGICAL AND  
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May 25, 29, June 1, 1972

THE CONSERVATION OF HISTORICAL AND ARCHAEOLOGICAL RESOURCES IN ALBERTA. A Prospectus for Public Hearings. 7 pages.

THE CONSERVATION OF HISTORICAL AND ARCHAEOLOGICAL RESOURCES IN ALBERTA. Position paper for Public Hearings prepared by the Public Advisory Committee on the Conservation of Historical and Archaeological Resources, March, 1972. 8 pages. (Includes three-page Addendum).

THE CONSERVATION OF HISTORICAL AND ARCHAEOLOGICAL RESOURCES IN ALBERTA. Report prepared by the Public Advisory Committee on the Conservation of Historical and Archaeological Resources. March, 1972. 32 pages.

THE CONSERVATION OF HISTORICAL AND ARCHAEOLOGICAL RESOURCES IN ALBERTA. Proceedings of the Public Hearings. May 25, 29 and June 1, 1972. 1 v. 565 pages. \$3.00

THE CONSERVATION OF HISTORICAL AND ARCHAEOLOGICAL RESOURCES IN ALBERTA. Summary of the Public Hearings. May 25, 29 and June 1, 1972.

- \* THE CONSERVATION OF HISTORICAL AND ARCHAEOLOGICAL RESOURCES IN ALBERTA.  
Report and Recommendations. May 25, 29 and June 1, 1972.

4. PUBLIC HEARINGS ON THE ENVIRONMENTAL EFFECTS OF THE OPERATION  
OF SULPHUR EXTRACTION GAS PLANTS  
October 2, 5, 11, 16, 19, 1972

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Dr. R.K. Klenm, August, 1972. 116 pages.

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- \* ENVIRONMENTAL EFFECTS OF THE OPERATION OF SULPHUR EXTRACTION GAS PLANTS.  
Report and Recommendations.

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1971. 125 pages.

- \* SECOND ANNUAL REPORT OF THE PUBLIC ADVISORY COMMITTEE.  
1972.

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By Special Order.



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W.R. Hanson.

FOUR WAYS FORWARD - ENVIRONMENT CONSERVATION AUTHORITY. October, 1972.

A PRELIMINARY ASSESSMENT OF ENVIRONMENTAL IMPACT OF OIL AND GAS EXPLORATION  
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\* Being compiled at the time of this publication.

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## **INTRODUCTION**

## I N T R O D U C T I O N

The Environment Conservation Act was passed in 1970, creating the Environment Conservation Authority as a Crown Corporation, charged with responsibilities for environmental matters. The Authority is unique, in that it was without direct precedent, either within or outside Alberta, at the time it was established.

The First Annual Report described the role and functions of the Authority as a vehicle for public participation in environmental matters. It also gave a general indication of the environmental posture which might be suitable for Alberta. The activities of the Authority in that year were also reported upon. In this Second Annual Report, the tasks of the Authority are considered in two parts.

Part I, entitled "Role and Functions of the Environment Conservation Authority", reports upon the amendment to the Environment Conservation Act, and attempts to give a general statement on the environment in relation to the Province.

In Part II, entitled "Activities", the Authority reports on its work during the year, including the activities of its Public Advisory Committees and the several public hearings it has held, as well as on such other activities and advice completed during the year and required of it by the Environment Conservation Act.

## **PART I**





# **1. ROLE AND FUNCTIONS OF THE ENVIRONMENT CONSERVATION AUTHORITY**

The Environment Conservation Act was passed in 1970 and amended in 1971. It established the Environment Conservation Authority as a corporation of the Province of Alberta, to consist of three members named by the Lieutenant Governor-in-Council.

The Authority came formally into existence on January 1, 1971. The First Annual Report of the Authority, covering its activities to November 30, 1971, gave a detailed outline of the role and functions of the Environment Conservation Authority as well as a definition of what environment conservation is held to mean as contained within the Act.

#### 1.1 1972 REVISIONS TO THE ENVIRONMENT CONSERVATION ACT

The Environment Conservation Act was again amended in the Spring Session of 1972. A copy of the amended Act is attached as Appendix 1. The two major elements in the amendments were: (1) to increase the membership on the Board of the Authority from three members to four members; (2) to clarify the relationship of the Environment Conservation Authority to the Minister of the Environment.

Amendments to the Act to show the relationship of the Environment Conservation Authority to the Minister of the Environment were made necessary by the fact that the Department of the Environment had only recently been brought into being. The Spring Session of 1972 was therefore the first opportunity to show the statutory relationship between the Authority and the Minister.

Comments on these amendments and suggestions for additional amendments in the Act are to be found in Section 5.0 entitled "Recommendations from the Public Advisory Committee on the Environment".

#### 1.2 RELATIONS TO THE DEPARTMENT OF THE ENVIRONMENT

To help it deal with the problems of the environment in the Province, the Government of Alberta established the Environment



Conservation Authority as a Crown Corporation to develop an overview of environmental matters. It was to develop public participation, encourage coordination among departments of government, and give advice to the Lieutenant Governor-in-Council on policy and legislation relating to the environment.

Partly as the result of the advice of the Environment Conservation Authority, the Government of Alberta next established a Department of the Environment to administer environmental programs and to coordinate programs that also involve other departments of government. The Department is now fully established and functions well. These two structures, the Authority on one hand and the Department on the other, enable the Government to develop, coordinate and administer environmental legislation and programs through the Department of the Environment and to relate to all sectors of the public in formulating policy through the Authority. Though the Authority has an arm's length relationship to Government, both the Environment Conservation Authority and the Department report to the Minister of the Environment.

### 1.3 RELATIONS TO PROVINCIAL CIVIL SERVANTS

The Act permits the Authority to require any officers or employees of any department of the Government or any Government agency to provide information that in the opinion of the Authority is necessary for the purpose of enabling it to carry out its responsibilities.

During the year the working relationships between the Authority and the departments and agencies of government became better articulated. In particular the use of civil servants by the Authority and for functions under its auspices has been structured and clarified in the following ways.

- (1) It is appropriate for the Authority to use civil servants as an Advisory Task Group to advise the Authority on the nature of its hearings, and when it does the services of the Conservation and Utilization Committee should be sought.

The Authority would seek approval from the relevant Deputy Minister if any work commitment were called for from a member of a department.

- (2) In connection with Authority hearings, written submissions from departments may be obtained by the Authority through the Deputy Ministers which can then be used and distributed by the Authority as required internally. If distribution external to the Authority is required, permission from the relevant Minister will be sought.
- (3) Written material, made available to the public prior to the hearings, includes factual information basic to the hearings as well as questions or issues to which a public response is sought. Civil servants may assist in the preparation of this material, subject to (1) and (2) above.
- (4) Provincial civil servants should not appear as active participants in public hearings on behalf of their departments unless directed by their Minister. However, the Authority could, in cooperation with the Conservation and Utilization Committee and the Coordinating Council, call for private internal discussions with civil servants on the subject of a public hearing.
- (5) The presentation by civil servants of technical speeches and reports in public groups and open seminars *in camera* is encouraged. If not *in camera* permission from the appropriate Minister is required.
- (6) Civil servants may be asked by the Authority, through the appropriate Deputy Minister, to act in a resource capacity *in camera* to subcommittees and task groups of the Public Advisory Committees.

These guidelines have proven realistic and workable in practice. Interdepartmental task forces have provided most valuable background information and reports, particularly with respect of Surface Reclamation, and the Operation of Sulphur Extraction Gas Plants, as well as

in preparation for the hearings on Land Use and Resource Development in the Eastern Slopes and the Environmental Effects of the Use of Bio-cides. The Authority believes that using the knowledge and the expertise of the several departments and agencies of government is an invaluable and basic element in laying the proper foundation for a successful and well balanced public hearing. The service, often given anonymously by able, conscientious and hard-working civil servants, is very much appreciated by the Authority.

#### 1.4 RELEASE OF ENVIRONMENT CONSERVATION AUTHORITY REPORTS

A variety of publications is prepared by or on behalf of the Authority. These are available on request while they remain in stock and are listed at the front of this publication. These reports and publications fall for the most part into four classifications, namely, pre-hearing publications, post-hearing publications, reports from the Public Advisory Committees, and special reports.

##### 1.4.1 Pre-Hearing Publications

Special efforts are made to present suitable information to all sections of the public prior to the hearings so that briefs can be prepared and discussions undertaken from an adequate pool of facts and knowledge. These pre-hearing publications include: (1) terms of reference, (2) a prospectus, (3) a position statement, and may also include one or more of the following: (1) a consultant's report, (2) a task force report, (3) Advisory Committee reports, (4) special reports.

Each hearing requires its own kind of preparation. For example, at the present time a series of 12 Information Bulletins are to be prepared and circulated prior to the projected hearings on Land Use and Resource Development in the Eastern Slopes.

#### 1.4.2 Post-Hearing Publications

Each hearing is reported on in three ways:

- (1) A complete written transcript of the hearings, including copies of the written submissions, is published as a public document at a nominal cost.
- (2) A concise and objective summary of the hearings is also published and made available to the public.
- (3) The report containing the recommendations of the Authority to the Minister and to the Lieutenant Governor-in-Council is prepared as a document for release by the Minister.

#### 1.4.3 Reports of the Public Advisory Committees

The Public Advisory Committee on the Environment prepares an Annual Report and Recommendation to the Authority, and this is published by the Authority as a public document. The Science Advisory Committee will this year present its first Annual Report to the Authority which will also be published and made available to the public. In addition, the Science Advisory Committee, as well as other Public Advisory Committees, will from time to time prepare special reports, and these will also be published by the Authority, and made available in such ways as are most suitable in the particular case. The report on the Technical Sessions on the Environmental Effects of the Use of Biocides, under the auspices of the Science Advisory Committee, is an example of this kind of report.

#### 1.4.4 Special Reports

The Authority may from time to time either through its own staff or under its own auspices prepare special reports related to environment conservation. Examples of these are:



- (1) The Four Ways Forward, Environment Conservation Authority, October, 1972.
- (2) A Preliminary Assessment of Environmental Impact of Oil and Gas Exploration and Pipeline Operations, Alberta.  
- Underwood McLellan Associates Limited, June, 1972.
- (3) The Forest Resource in Alberta. - EPEC Consulting Limited, June, 1972.

A full list of the publications and reports of the Authority appears at the front of this publication.



## **2. STATEMENT ON THE ENVIRONMENT**

## 2.1 THE PROVINCE OF ALBERTA

Canada is a gigantic country with endless variations in its environment. Its population is concentrated in many densely packed centres separated by immense empty or sparsely settled areas. Alberta is like the country. Moving from the east to the west the flat and rolling plains of the Province give way to the beauty of the undulating foothills and then to the grand staggering vertical upthrusts of the Rocky Mountains where the rivers rise. From the south to the north, hot arid near-desert country transforms to great reaches of ranch country, then to fertile farmlands and green fields, which in turn are displaced by the limitless expanses of lake and forest country in the middle and northern parts of the Province, until finally in the north where the rivers flow to the Arctic the boundary of permafrost country is reached, and a corner of the stones and lichens of the Laurentian Shield is captured. Each of these great regions displays its own mix of living species, has its own productivities, problems and possibilities. Of the ten cities, two have half a million people each.

The surface of all of the Province outside the cities is extensively used, for agriculture, for forestry, for recreation. And below the surface, throughout the Province, seam upon seam of coal is found, oil, gas, tar sands and other minerals.

Environmental problems arise when the several species and individuals attempt to make use of the various surface and subsurface resources in ways that are not compatible with each other. Indeed, even a single species seeking to survive can change its environment in ways not always most suitable to its own well-being. The question is, what should be done about it?

## 2.2 GENERAL OBJECTIVES

In its first year of operation the Environment Conservation Authority assessed the public view as a desire for a statement of major

objectives and of general ways in which these objectives might be met. Through its discussions with its Public Advisory Committees and with groups and individuals throughout the Province the Authority developed such a general statement in its First Annual Report, presenting it to the Government as the Authority's estimation of the public view at that time. The general objective was to seek that balance between sometimes conflicting forces that adequately protect the environment and at the same time permit the further evolution of human society. Four general parameters out of which society could construct a proper relationship between man and his environment were suggested. These parameters were further enlarged upon in the publication, "The Four Ways Forward", released in October, 1972. Environmental Management, Environmental Economics, Environmental Education and Environmental Legislation comprise the four ways forward. Each depends upon and involves individuals, groups and society as a whole in general but in ways that may need to be determined anew in specific cases.

### 2.3 FROM THE GENERAL TO THE PARTICULAR

There seemed to be public acceptance of the general objective that adequate environmental protection be attained within an evolving society, and that environmental management, economics, education and legislation were reasonable tools to help society move forward towards this self-sustaining goal. But once the general objective had been set, attention turned to specifics. There were two aspects to this. One had to do specifically with what problems should be tackled. The other had to do with how the public itself could participate in judgments on specific matters.

Once the major battle had been won, namely, a general recognition of the importance of environment conservation, time and attention turned to particulars, both in the activities of the public advisory committees and in the public hearings and enquiries that were held. Some comments on how the public view evolved in these two avenues



for public participation give insight into the role that people can play in these processes.

## 2.4 THE EVOLUTION OF THE PUBLIC VIEW

Because of start-up times, the Public Advisory Committees to the Authority and the public enquiries conducted by the Authority, had an opportunity for full and regular operation only in the second year of the Authority's operation which is now the year of report.

### 2.4.1 The Public Advisory Committees

The Authority is empowered to appoint one or more Public Advisory Committees on environment conservation, and prescribe the duties and functions of such Public Advisory Committees. No new committees were appointed this year, but each of the four committees previously named developed their structures, addressed themselves to their several different tasks, and made most important contributions to the work of the Authority and to the conservation of the environment in Alberta. Each committee was also associated with at least one innovative process during the year. Each committee set specific projects for itself and made specific recommendations to the Authority. The general work of the committees is discussed in detail in Part II, and complete membership lists are given in Appendix 2. Some comment on the innovations follow.

#### 2.4.1.1 The Public Advisory Committee on the Environment

The Public Advisory Committee on the Environment, whose structure, mode of operation, Annual Conference and Annual Report and Recommendations are described elsewhere, took on an additional task this year. The Province of Alberta is cooperating with the Canadian Council of Resource and Environment Ministers in the Man and Resources

Program. The objectives of the Man and Resources Program is through public participation to develop goals and objectives at the national and at the provincial levels for resource utilization and environmental protection in Canada. The Public Advisory Committee on the Environment was asked and agreed to cooperate fully in the development of the input from the Province of Alberta to the Man and Resources Program. This important and rewarding task had double benefits. It helped to make more meaningful the structure and objectives of the Public Advisory Committee on the Environment itself. It also afforded the large number of organizations, institutions, groups and individuals that are represented in the Public Advisory Committee an opportunity to have their views incorporated in the Man and Resources Program. The Annual Conference of the Public Advisory Committee was extended to combine with the Provincial Workshop on the Man and Resources Program and a National Workshop was subsequently held.

The CCREM Program is continuing, as is the cooperation and participation of the Public Advisory Committee on the Environment in the Province of Alberta's share of it. This work is to reach its culmination in a National Conference on Man and Resources under the sponsorship of CCREM in Toronto in 1973.

#### 2.4.1.2 The Science Advisory Committee

This Committee, more formally known as the Public Advisory Committee on the Environmental Sciences, has assumed the responsibility for organizing and reporting upon the Technical Sessions on Environmental Effects of the Use of Biocides, thus introducing a new element that may have some generality in the procedures of the Authority leading to public hearings.

Many subjects assigned to the Authority have penetrating scientific and complex technical aspects associated with them. It is at the same time necessary that thorough and broadly based public discussion take

place on these subjects and that the views of the public on them be made known to the Authority. One way to overcome some of the difficulties that are involved is to have the scientific and technical problems examined in depth by highly expert individuals in interdisciplinary meetings with suitably prepared reports on these technical sessions to serve as the basis for subsequent public hearings. This innovation is being undertaken by the Science Advisory Committee in respect of the Technical Sessions on the Environmental Effects of the Use of Biocides. The Report on these Technical Sessions will then become a major information base for the subsequent public hearings.

The Authority is very pleased with the introduction of this technique, and is interested to see how it works out in practice.

Public Advisory Committee on  
2.4.1.3 The Conservation of Historical and Archaeological  
Resources

The innovation introduced by the Public Advisory Committee on the Conservation of Historical and Archaeological Resources was also unique and interesting. A small group of highly expert citizens of the Province took on the most demanding task of preparing the pre-hearing publications associated with the public hearings on the Conservation of Historical and Archaeological Resources. The Report of the Committee, which was given a wide public circulation, provided an objective analysis of the nature and extent of historical and archaeological resources in Alberta, of the forces that may bring about their destruction, and of methods for preservation that may be adopted to conserve these resources.

The Public Advisory Committee on Historical and Archaeological Resources also participated in the public hearings throughout the Province. A member of the Committee made an oral presentation of the Committee's report, and responded to questioning by the public. Members of the Committee also acted as a panel of experts to assist the Authority in its questioning of the submissions made to it during the course of the

hearings. The important innovation here was the detailed, comprehensive and thorough way in which a Public Advisory Committee was incorporated into all of the processes and work associated with a public hearing on an important subject, from its early initiation, the definition of the subject, the exploration and elaboration of the problems involved, the preparation of working positions, recommendations, principles and draft legislation for examination by the public, and the processes of the public examination itself. These were most important and vital contributions to the public hearing and to the Report and Recommendations of the Authority which are now in the hands of the Government of Alberta.

#### 2.4.1.4 Public Advisory Committee on Environmental Education

The Public Advisory Committee on Environmental Education is concerned to identify what is currently being done in the field of environmental education in the Province, and what direction should be followed in the future. To help it attain these ends it is proposing a provincial conference on environmental education tentatively scheduled for the Spring of 1974. Prior to that time a position paper is to be prepared under the auspices of the Advisory Committee to give a working basis for the conference. The position paper would attempt to identify and describe the current formal educational programs and activities concerned with the environment in Alberta, and also seek out and identify other activities that could be associated with environmental education.

There has been widespread interest by many agencies and by many elements of the public in such a conference. The Advisory Committee is hopeful that these diverse interests and agencies might be combined in a conference that will produce useful discussion and results for all elements involved in it. The objectives of the conference would be to find out where we now are in environmental education and to formulate desirable ways of moving forward.

#### 2.4.2 Evolution and Interaction Through Public Hearings

During the year the public provided input into four public hearings on matters of importance to the Province. Each hearing was quite different from the other, each brought out different sectors of the public, and in each public participation played a particular role that was vitally important to the outcome of the hearings and to the recommendations of the Authority. It is interesting and perhaps instructive to examine the part public participation played in these four hearings, so that a further insight can be gained into the continuing role citizens are playing in the evolution of society in the contemporary era of the environment.

##### 2.4.2.1 A Proposal to Restore Water Levels in Cooking and Hastings Lakes

Anxiety and concern had been expressed by many people over many years at the fall in the level of Cooking and Hastings Lakes and other lakes in the Cooking Lake Moraine area, and in the diminishment in the quality of the water in these lakes. Following a petition from several hundred citizens hearings were held. Three phases can be identified in the evolution of the concept as it developed in the hearings.

The specific proposal that water should be pumped by pipeline from the North Saskatchewan River into Cooking Lake, thence by overflow into Hastings and Beaver Hill Lakes before it returned into the Saskatchewan River, was the first focus of attention. Specific problems were revealed and solutions to them proposed but steadily the hearings moved into what could be called their second phase. Attention previously confined to Cooking and Hastings Lakes alone was broadened to include all of the water and land contained within the 1500 square miles of the Cooking Lake Watershed Moraine as a whole.

The major thrust broadening the scope of the hearings in this way came from cities and municipalities, from organizations and associations,



from government agencies and from the university community. The emphasis was on the public benefit, and on the important contribution the region as a whole could make under appropriate environmental management, to the recreational needs of the citizens in the area, and the visitors to the area. The third phase, which appeared in the later stages of the hearing, resulted from an attempt to place the Cooking Lake problems in a balanced provincial context. This final phase in the evolution of the hearings developed the need for making a comparative judgement of the Cooking Lake Watershed Moraine area as against other lakes and regions in the Province that might have somewhat similar problems or potentials for development.

The course that public discussion took was instructive. A close examination of a particular proposal led to the conclusion that there were broader implications. These implications were then examined, and through examination extended until they covered the whole geographical and political area that the public felt it had responsibilities for. This was clearly a wise way for public participation to move.

#### 2.4.2.2 The Impact on the Environment of Surface Mining in Alberta

The instructive element in these hearings is what can happen when strongly opposing points of view are put forward through public discussion. There has been a natural tendency in this circumstance for views to be strongly put but in the process of presenting them to a discriminating and critical audience, to have the views clarified and exposed to the processes that develop a consensus. In this particular set of hearings transformations tending towards a consensus brought clarifications on two rather different aspects of the subject. The simplest one was that, in the prairies, it was necessary both to get the coal out for energy production and to reclaim the land to restore its productivity. The second element of clarification through discussion was that coal mining in the mountains and coal mining in the

prairies were in every way so different that it was not useful to talk about them in the same terms, and that by separating the problem into these different components considerable advances towards reasonable solutions could be achieved.

In these hearings then the evolution through open discussion was the clarification that previously conflicting needs could be resolved, and a recognition of the realities of the problem.

#### 2.4.2.3 The Conservation of Historical and Archaeological Resources in Alberta

The interesting new element of public participation brought out in the public hearings on the Conservation of Archaeological and Historical Resources was both novel and gratifying. The initial impulse for the hearing came from a very small and highly specialized sector of the public. The trigger that set the process in motion was a letter to the Premiers of the Provinces and the Prime Minister of Canada from the President of the Canadian Archaeological Society, requesting that attention be given to the state of legislation affecting archaeological and historical resources. It happened that the President of the Canadian Archaeological Society was an Albertan and so it was all the more appropriate that he become the Chairman of the Public Advisory Committee to the Authority on this matter. There was initially serious doubt as to whether the public interest was broad enough to justify public hearings, but the Advisory Committee recommended that they should be held. In the upshot, the Authority came to believe that the subject of the hearing touched the hearts of all the citizens. It found the warmest feeling in all of the people for their own history, for the history of their region and Province extending not only into the immediate past, but also deep into the unwritten history of the several tens of thousands of years in which these areas have been occupied by man. In this case then, an initiative from a very small and highly

specialized group in our society evoked and was in sympathy with a deep, warm and personal concern shared by what seemed to be the large majority of the citizens of the Province.

#### 2.4.2.4 The Environmental Effects of the Operation of Sulphur Extraction Gas Plants

In these hearings a rather different but still quite important aspect in the processes of public participation made itself clear. We are all of us aware of the great benefits that have accrued to our Province through the direct and the indirect effects of the oil and gas industry. These benefits accrue to the inhabitants of the cities, to the employees in the plants operated by the companies and indeed to all of the citizens of the Province in noticeable measure. The disbenefits accrue to a very small minority, since the sulphur extraction gas plants are located in only a relatively small part of the Province and in thinly populated areas. In addition, many of the disbenefits are borne by prevailing winds and emphasized by accidents of terrain and meteorology. As a result, the affected individuals may tend to concentrate in certain sectors in the vicinity of a gas plant, rather than in the whole terrain surrounding it. Moreover, this quite small minority of individuals are for the most part self-reliant, independent operators of farms, ranches or small businesses; they are not organized into groups.

In these circumstances it is plain that the individual citizen who has suffered a disbenefit from a process that has benefited the overwhelming majority of the Province finds himself at a psychological disadvantage. He may be surrounded by disbelief or a tendency towards disbelief even sometimes by his friends who are up-wind rather than down-wind of the source. Such a person needs extra courage to make his case against the overwhelming evidence of the odds that seem to be against him. Another result, however, also follows. After years of

experience these individuals develop a flair for making their case known if they have the courage to persist. The hearings made clear these two elements in the participatory process. First of all, the loneliness that an individual feels in fighting for his own rights by himself. And then secondly, the development after fifteen years of experience of a kind of a wisdom and an intelligent knack for presenting their case in an effective way.

#### 2.4.3 Public Opinion Survey

The Authority has made a practice of taking a public opinion poll on the subject of its hearings, and then comparing it with the views expressed by the public who were actually in attendance at the hearings. It is possible that the people who appear at the public hearings may be those who are most vitally interested in the particular subject. The statistical sampling then enables a comparison to be made between what the public at large may feel as compared with what that part of the public that is most vitally concerned with the subject feels. It is therefore worthwhile to remark that the results of the public opinion polls have so far been in general agreement with the weighting of the views presented at the public hearings themselves. There are, of course, considerable differences in the kinds of views that can be given expression in a public opinion poll as against those that can be expressed through briefs, submissions, argument and discussion. The direct comparisons that can be made are therefore limited, but they do nevertheless include some of the basic questions that underlie a hearing. The Authority does not feel that close agreements can be expected in all cases. It will therefore continue with its statistical sampling of public opinion so that the views presented at the public hearings will continue to have the broader reference to provide a comparative background.

#### 2.4.4 The Pleasures and Perils of Public Participation

Public participation makes demands on people. It makes demands on governments at all levels, on groups and organizations, on industries and on social processes. It also requires certain qualities in people. It is not a thing easily come by, easily brought about, or easily put through to a successful conclusion. But it is something that is happening now. It is a part of contemporary society. People are working together in groups, in advisory committees, in public hearings, in industry, in government, and across these interfaces, to bring about improvements in the human environment. There is fun in it, there is hard work in it, there is frustration in it, there is satisfaction in it. It may be that citizens who want to participate need a combination of characteristics like stubbornness and flexibility, patience and impatience, and a desire for work combined with the wish to apply intelligence, if they are to get on with such tasks.

##### 2.4.4.1 Stubbornness and Flexibility

Man may be a selfish animal. His self-interest reflects his own needs. It also reflects the needs of his family, his children, his grandchildren, the needs of his neighbors, of his fellow citizens, of those with whom he shares common or conflicting interests. People tend to integrate their selfishness. It may therefore not be improper that people have the stubbornness to present and protect those points of view they feel personally to be proper and right for themselves. It is perhaps important that the selfish interests of human beings should be protected in the ways people think they should be now and for the future. But flexibility is also needed. Since we live with others whose needs and points of view differ and we must work out a world that is shared by all. We must have the courage to put our views and our own needs forward and yet have the flexibility to accommodate ourselves to the needs and the views of others.



#### 2.4.4.2 Patience and Impatience

There are also urgencies associated with many of the problems that we must deal with, but it takes time to work them out. We must therefore move with a sense of urgency and at the same time recognize that others also must be brought into these processes. The sense of urgency is needed; otherwise no action at all may be taken. The patience is needed not only to let the processes happen, but to continue to urge them even after some time has passed.

#### 2.4.4.3 Work and Intelligence

Among the pleasures and perils of public participation, work and intelligence play a mixed role. It may be that these qualities are possessed in potential in roughly equal amounts by all. They are not however put out in equal amounts by all. Voluntary work by citizens and by citizens' groups means hard work for many. As for intelligence, it is only a human quality. It is the matter of using it that is the requirement. Good results won through hard work intelligently done with others probably provide the greatest pleasure that public participation affords.

#### 2.4.5 It Takes Time

To change things takes time. When people work together for change, when citizens move forward through democratic processes, many citizens and many different groups must reconcile their problems and come together. It takes time to bring groups together. It takes time to bring ideas out in groups. Governments look to their citizens for views. It takes time for government to get a response from citizens, and it takes time for government to set up programs and legislation that accord with its needs and the needs of the citizen. Finally,

it takes time to incorporate these changes into the lives of the communities themselves, and it takes time to test the changes out.



### **3. PROGRAMS FOR THE FUTURE**

A minimum of a year, and in some cases two or three years, may be required before a public enquiry has run its full course from its inception, the preparation and distribution of information to the public, the hearings themselves, and the preparation of the Proceedings and the Report and Recommendations on the public enquiry to the Government. At any one time the Authority is therefore working on many different enquiries. A desirable objective is to hold two major public hearings a year, one in the Spring and one in the Fall, and then to hold special hearings on more limited subjects as need might arise. Major hearings, in various stages of development, are now scheduled well into 1975. Special hearings on specific subjects are being fitted into this overall framework.

### 3.1 MAJOR HEARINGS

#### 3.1.1 Land Use and Resource Development in the Eastern Slopes

It had originally been intended to hold separate hearings on the Crowsnest Pass Area, on the Canmore Corridor, and later on the Bighorn Dam and Reservoir Area. It was subsequently decided that there were sufficient interrelationships between the different river basins and regions in the mountains and foothills that the whole area should be considered in one consecutive set of hearings. The Authority will therefore hold comprehensive and wide ranging hearings on Land Use and Resource Development in the Eastern Slopes of the Rocky Mountains and the Foothills Area of Alberta, beginning in June, 1973.

For the purposes of the hearings the Eastern Slopes are defined as the total mountain and foothills areas in the Province from its western and north-western borders with British Columbia and its southern border with Montana to the eastern limits of the foothills but not including the National Parks and Indian Reservations.

Land is now used in the Eastern Slopes or is proposed for use for such purposes as tourism, summer and winter recreation, urban development, forest utilization, mineral resource industries, surface



mining, oil and gas development, underground coal mining, agriculture, watershed conservation, domestic water supply, hydroelectric power developments, wildlife and fishery management, wilderness and natural areas, institutional use (charitable and religious groups), archaeological sites, research, etc.

Submissions on the different present and potential uses of resources within the Eastern Slopes area and how these may affect each other are expected at the hearings.

### 3.1.1.1 The Five Regions

For the purpose of the hearings the Eastern Slopes will be divided into five separate districts corresponding to the five major watershed basins and outlined by the statutory boundaries of the four Regional Planning Areas and Improvement District No. 14. The eastern boundary of the area corresponds with the eastern edges of the foothills and is prescribed by an arc lying to the west of the cities of Lethbridge, Calgary, Red Deer, Edmonton and Grande Prairie. Each district will be identified with the name of its watershed and be associated with a Regional Planning Area as follows:

<u>Watersheds</u>	<u>Planning Authorities</u>
1. Oldman River Basin	Oldman River Regional Planning Commission
2. Bow River Basin	Calgary Regional Planning Commission
3. North Saskatchewan River Basin	Red Deer Regional Planning Commission
4. Athabasca River Basin	Provincial Planning Authority
5. Smoky River Basin	Peace River Regional Planning Commission

Separate hearings will be held in each of the five separate districts both in the major city in that district and in a major town in the foothill or mountain region of the district. To assist in the preparation of briefs, planning reports prepared by the individual Regional Planning Commissions will be made available to the public

prior to the hearings.

### 3.1.1.2 Development Proposals

In addition to general discussions at the hearings on Land Use and Resource Development in the Eastern Slopes, provisions are made for hearings on specific development proposals. Towards this end time will be separately scheduled at the hearings to receive proposals for commercial, recreational and tourism projects. These will be specific proposals advanced by private, commercial interests for projects designed to promote recreation and tourism within the area.

Such proposals, formally submitted to the Director of Lands, will be made available to the public by the Authority prior to the hearings so that comments and briefs concerning them can be presented at the hearings on them.

### 3.1.1.3 Objectives of the Hearings

Through public hearings to enquire into all potential uses and to formulate ways in which optimum benefits and environment conservation can be achieved now and for the future from the various resources on the Eastern Slopes. To consider and evaluate the views of the public on specific recreational and tourism development proposals for the area. To lay the views presented to the Authority and the Authority's recommendations thereon before the Government of Alberta.

### 3.1.2 The Environmental Effects of the Use of Pesticides and Insecticides

The public hearings on the Environmental Effects of the Use of Biocides relate to the expanding Federal and Provincial Government policies and programs involving the use of chemical compounds which present a threat of serious long-term environmental consequences.

Since the subject matter is in part highly technical, the

hearings will go forward in two phases. The first phase will involve technical sessions to be held *in camera*. The second phase will be the public hearing at which the public, having had access to a summary of the data and questions tabled at the technical sessions, will then prepare its own input on the subject.

#### 3.1.2.1 Scope of the Technical Sessions

The technical sessions will consider all commercially produced chemicals used in the intended control of undesirable species in Alberta. These chemicals include all types of biocides - insecticides, herbicides, fungicides, bacteriocides, and vertebrate poisons.

#### 3.1.2.2 Documentation of Data

Factual data on the past and present use of chemicals in the above listing will be assembled. Additionally, information on target organisms, dosage rates, locations and dates of application, methods of application, ultimate fate of the breakdown products, and background levels in the environment will be included where available.

#### 3.1.2.3 Delineation of the Problems

Based on the above documentation the problems resulting from the use of chemicals will be discussed and elucidated. Ecological effects will be of prime concern including the direct effects of adding a poisonous substance to the environment as well as the indirect effects resulting from depletions in populations of target organisms. Also to be considered is the development of resistance in organisms, accumulation and persistence of chemical compounds and their breakdown products, cycling of compounds within an ecosystem and effects on soil and water microenvironments. Consideration will also be given to whether present programs involving these chemicals create problems which are of an aesthetic nature.

Alternatives to present chemical procedures will be considered including alterations in agricultural practices, biological control and genetic manipulation. The economics of chemical applications is also a relevant issue, particularly the long-term costs and benefits such as decreased soil productivity, increased dosages and the constant necessity for new chemicals and formulations.

Attention will also be given to the legal and jurisdictional problems encountered in the widespread application of toxic chemicals on private and Crown land. The present system of testing and certification of new chemicals will be examined with emphasis on the policy and administrative procedures of governments.

#### 3.1.2.4 Public Hearings

A term of reference more clearly focused on the hearings themselves will be reserved until after the technical sessions have been assessed.

#### 3.1.3 The Forest Resource

Public hearings on Forest Utilization and Its Environmental Effects are scheduled for 1974. For the purpose of the hearings, forest utilization and its environmental effects include forest management practices themselves, together with their integration into other uses and functions of the forest and forest land now and for the future.

Of prime concern will be forest utilization practices and the environmental problems associated with various forest management procedures. The economic and community factors related to the management of forests for timber production are also relevant topics. The economics of forestry operations and a cost/benefit analysis of intergrated or alternate uses for forest land will be considered.

Other aspects of forest land use will be included to the extent that they are determined by, conflict with, or arise from forest management policies and procedures. These include such uses as

recreation, fish and wildlife production and watershed control. Questions related to the transformation of forest into community pastures and the impact of forest fires may be relevant side issues.

The general objective of the hearings is to move closer towards obtaining maximum overall environmental, economic and community benefits on a continuing basis from the forests of the Province.

To provide a sound factual basis for the public hearings several reports have been prepared or are in the process of preparation. These include "The Forest Resource in Alberta" which is an examination with respect to conservation, recreation and the forest industry. A second report entitled "The Impact on the Environment of Timber Production and Processing in Alberta" provides a comprehensive study of forest management and some of the economic factors associated with it. These two reports are available to the public. There is in addition a detailed study of forest management and forest utilization practices under the auspices of the Department of Lands and Forests which will be made available to the Authority for the purposes of the hearings. This study is entitled "The Environmental Effects of Timber Harvesting" and is concerned with (1) timber harvesting patterns and procedures, (2) reforestation methods and results, (3) road systems.

Some of the points that have been brought out in these studies can be summarized.

#### 3.1.3.1 Forest Management

The harvesting, transportation and processing of wood are the major commercial activities associated with large tracts of forest land in Alberta. The hearings will attempt to elucidate the difference between pulpwood and saw-timber harvesting in terms of policy and regulations, management practices and environmental effects.

All aspects of forest management will be considered with particular attention to the problems associated with cutting practices, extraction methods and transportation including road construction and maintenance. Alternative cutting methods will be evaluated in terms

of environmental and visual effects as well as the resulting conflicts with other forest land uses.

Of particular concern are the present and future problems arising from different methods of reforestation. Present practices involving slash removal, scarification, seeding, planting and thinning will be considered in terms of their efficiency in establishing a new crop and minimizing environmental damage following harvesting. The economics of present and alternative reforestation practices will be compared focusing attention on cost/benefit analysis and the possibility of increasing yield. Developments in seeding techniques, the growing and planting of seedlings, methods of site preparation and species improvements through seed selection and research in genetics will also be considered. Attention will also be given to methods of improving the production of Alberta's forests through more efficient operations and the utilization of formerly non-commercial species.

All types of pollution, biological and aesthetic, associated with processing plants will be examined. Processing plants will include lumber mills as well as pulp and paper plants.

#### 3.1.3.2 Forest Recreation

The forest lands in this Province are becoming more important as recreational areas for Albertans as well as out-of-province tourists and the present and future conflicts which arise between recreational use and commercial operations will be considered. The visual effects of commercial forestry operations will undoubtedly be a prime concern to the public and the problems involved in striking a compromise are to be discussed.

#### 3.1.3.3 Fish and Wildlife Production

Forest management practices can greatly affect the fish and wildlife resources of an area. The concepts of forage and habitat development will be explained in terms of commercial forestry



operations. The importance of size and configuration of cuts will be considered as well as requirements for cover when areas are made accessible to the public. The effects on fish populations of increased erosion and thermal pollution of streams will be discussed.

#### 3.1.3.4 Watershed Control

Given the drainage pattern of most large water courses in Alberta, the use of forested land in regulating the quality and quantity of surface water assumes prime importance. Of particular concern is the manner in which water supplies of major urban centers may be affected by various forest land uses in the foothills. Attention will also be given to the importance of forests in erosion control, snow retention and flood prevention. Projects currently under way in Alberta should be summarized to focus attention on the local situation.

#### 3.1.3.5 Other Aspects

There are a number of related topics worthy of consideration. These include conflicts which may arise between present land use policies in effect in Alberta and to what extent the environment is affected; the problems of forest land use planning including biological, economic and social aspects; the economics of current forestry operations; surface damage from exploration for oil, gas and coal deposits; the prevention and use of fire in the forests and the effect of domestic stock grazing in forest reserves.

#### 3.1.4 Impact on the Environment of Oil and Gas Exploration, Development and Transportation

As part of the general examination of the Impact on the Environment of Resource Development in the Province, requested of it by the Government, the Authority has made certain preparations for its public enquiry into the Impact on the Environment of Oil and Gas Exploration, Development and Transportation. The hearings are now scheduled for

late 1974. A Preliminary Assessment of the Environmental Impact of Oil and Gas Exploration and Pipeline Operations in Alberta, commissioned by the Authority, has been released to the public during the past year. Alberta is also, of course, greatly interested in the impact on the Province of resource development in the extension of the sedimentary basin northwards of the Province up to the shores of the Arctic Ocean and in the Arctic islands. The probability that Alberta may provide an energy corridor for these important resources is not insignificant.

In addition the development of the Athabasca Tar Sands presents entirely new problems in resource development that now show the promise of economic solutions that give encouragement to expanded production and the introduction of new plants. Studies under way under the auspices of the Department of the Environment into the environmental effects of these operations will also be made available to the Authority for the purpose of the hearings.

#### 3.1.4.1 An Interim Report

"A Preliminary Assessment of the Environmental Impact of Oil and Gas Exploration and Pipeline Operations in Alberta", commissioned by the Authority, was tabled in the Legislative Assembly in 1972. It is available on request and will be circulated in connection with the public hearings.

The Interim Report gave rise to a list of recommendations that warrant additional consideration. It also outlined some areas that needed further study before more pointed recommendations for public consideration could be made. These are listed here for information, but have not yet been subjected to public hearings.

#### 3.1.4.2 Recommendations for General Consideration

1. The Provincial Government and the Petroleum Industry should embark on a continuing, co-ordinated educational program to inform all

its employees and those of its contractors of the working procedures that cause environmental damage as well as the preventative measures required to minimize damage.

2. The Provincial Government should consolidate the Acts and Regulations pertaining to oil and gas exploration and related activities as well as to clarify some of the clauses.
3. The Provincial Government should establish a central government agency ("Petroleum Agency") which would act as a clearing house and would be responsible for authorizing all field programs and land acquisitions related to petroleum operations. The proposed agency would have the responsibility of communicating with experts in all government departments concerned with field programs and land acquisitions and would provide petroleum companies with all necessary approvals and clearance documents.
4. It would be most desirable if a specific staff group within each petroleum company were designated to handle all dealings with the proposed government agency recommended above. The practice of assigning to contractors the responsibility of obtaining clearance and approval documents should be discouraged by both industry and government.
5. All oil spills, regardless of the source or magnitude, should be reported to one government

department or agency.

6. Permission to operate a pipeline should be withheld unless the owner has filed plans for cleanup in case of pipeline failure throughout the length of the pipeline and has provided access at pipeline river crossings and control points.
7. Soil surveys should be made by competent soil scientists of any area where accelerated soil erosion is now occurring as a result of exploration activity or of any area where it is suspected that the soils are susceptible to accelerated erosion. This has not always been done to the degree required.
8. The Provincial Government should consider the posting of bonds for field construction programs which would be returned when the project has been completed and inspection has determined that environmental regulations have been adhered to.
9. The Provincial Government should consider scheduling land sales so that seismic work in high land value areas and those areas that are susceptible to accelerated erosion would be conducted in the winter months only.
10. Government and industry should establish procedures whereby it would become unnecessary to conduct field programs, such as seismic surveys, within very restricted time periods,

thereby appreciably reducing environmental damage. Land sales should be scheduled accordingly.

11. The Provincial Government and the Petroleum Industry should make much greater efforts to acquaint the public with facts concerning environmental damage that has been caused by exploration activities as well as the steps that are being taken to minimize future damage and restore the environment where damage has occurred in the past. The beneficial effects of exploration activities should also be publicized. The news media, including television, should be used in supplying the public with these facts.
12. Consideration should be given to ensure that federally chartered pipelines within the borders of Alberta are subjected to Provincial Government scrutiny regarding rights-of-way, construction standards and operation procedures. This is believed to be important in view of the fact that it is inevitable that federally chartered, large diameter pipelines from the Arctic will traverse Alberta at some future date.
13. The Provincial Government should investigate the possibility of making greater use of aerial photography and proven photogrammetric techniques for assessing proposed seismic programs, route selection of roads, pipelines, battery sites, etc. and for the inspection of completed

projects. It is believed that in some cases this work could be carried out more thoroughly, more efficiently and at less cost if aerial photographs and photogrammetric techniques were employed to a greater extent than is currently practiced.

14. Well site and battery locations should be more carefully assessed prior to approval when these facilities are planned near water courses or on steeply sloping ground. Some modification of regulations concerning the positioning of well sites may be required.
15. The Government should require that approval of access road plans, including drainage and erosion control structures to be installed, be obtained where roads are to cross ravines or water courses.
16. Consideration should be given to amending the Canadian Fisheries Act to include silts and clays deposited in water courses and lakes as pollutant if caused by man-made activities.
17. Consideration should be given to the strict enforcement of the banning of the use of 4-wheel drive vehicles by the general public in areas that are sensitive to accelerated erosion, especially during wet periods of the year.
18. More comprehensive planning by government and industry of access road routes should be undertaken and joint use of these roads should be mandatory unless the reasons for not doing so are overwhelming.



3.1.4.3 Areas Needing Further Study Before Recommendations  
Can Be Made

1. A comprehensive research program should be undertaken by government and industry into the causes and control of accelerated erosion which is now occurring in some areas being explored for oil and gas. Emphasis should be placed on prevention rather than restoration for all future programs but there is a definite need for improved restoration techniques for those areas now being subject to accelerated erosion.
2. A research program should be launched on a continuing basis for at least a 3-5 year period to investigate the optimum procedures for re-establishing ground cover for areas that are undergoing accelerated erosion. A series of test plots should be established in each region, where accelerated erosion is occurring, so that a variety of ground cover, mulches, fertilizers, soils and seeding procedures can be researched under the climatic conditions prevailing in the area. The results should be made available to all petroleum companies.
3. The Provincial Government should accelerate and intensify the gathering of meaningful baseline data of the renewable and non-renewable resources of the province. These data are necessary so that the government can:
  - a. assign the best possible land use of each area so that the maximum rewards

for the use of this land will accrue to the citizens of Alberta and,

- b. properly assess the environmental damage that may be caused by exploration or pipeline activities.
4. A joint study by the government and industry should be made of ways and means to extend and up-grade the Oil Spill Emergency Plan. The planning for cleaning up oil spills in all producing areas of the Province should be up-graded to the standards now in force in the Pembina field. Furthermore, similar plans should be completed to take care of oil spills at any point along all pipelines in the Province located outside of producing fields. Particular attention should be given to river access by equipment and supplies for the repair of pipeline failures and the recovery of oil spills at control points.
5. A thorough investigation by government and industry should be initiated to determine procedures which would minimize the possibility of major oil spills entering lakes and water courses in the case of pipeline failure. The investigation should include the use of automatic sensing devices, the effectiveness of automatic shut-off valves and improved procedures for inspecting the condition of pipelines. Existing installations as well as proposed installations should be assessed.
6. A comprehensive investigation should be

undertaken to determine the technological and economic feasibility of establishing corridors that would contain a number of oil and gas pipelines as well as power transmission lines and communication services. The possibility of including highways and railroads within the same corridor should also be considered. The study should examine the problem from an installation, operating and maintenance point of view and should consider the safety, legal and insurance implications to individual owners. It is considered that this feasibility study is essential prior to the selection of specific corridor locations.

7. A study should be made to investigate the economic feasibility of using timber which is cleared from rights-of-way which is now, in many cases, wasted. Small mobile processing plants might be a partial solution to the problem caused by the wide distribution of the rights-of-way. Some form of subsidy to the forest industry might be worth considering rather than wasting this resource.
8. Because of the large mileage of flow lines, which are currently unregulated, a study should be undertaken to establish control of the location, construction and operation of flow lines in order to minimize environmental damage.

### 3.1.5 The Urban Environment

The term of reference for the hearing initially entitled "Regulated Development in the Strathcona Industrial Corridor", is still

undergoing transformation. There is an impulse to broaden the term of reference to give it a more general base within the concept of the urban environment.

### 3.2 OTHER SUBJECTS OF INTEREST

Apart from the major scheduled hearings, additional subjects and problem areas have been brought to the attention of the Authority. These include suggestions for hearings on specific proposals, and the Authority will begin hearings of this kind for the first time in 1973. Areas of somewhat broader scope have also been referred to the Authority for further consideration.

#### 3.2.1 Specific Commercial and Recreational Development Proposals

In the course of the hearings on Land Use and Development in the Eastern Slopes, provision will be made for a public response to proposed commercial tourist and recreational developments in these foothill and mountain areas. There is an appreciation that advantage should be taken of the wonderful opportunities these magnificent resources afford the citizens of the Province and indeed a much wider population, and also that such developments should be brought forward with proper attention to other factors.

#### 3.2.2 Suggestions from the Public Advisory Committees and other Groups and Individuals

The Authority has been requested to hold public hearings by groups and individuals on such subjects as Provincial Parks Legislation and Policy, the Future Use of Lakeshore Properties, Wilderness Areas, the Preservation of Natural Historic Sites, and Water Management. The Authority very much appreciates receiving these suggestions, discusses them with its Public Advisory Committees and incorporates them in its program as best it can. Recommendations from the Public Advisory Committees are listed in Part 2, Chapter 3.

### 3.2.3 The Peace-Athabasca Delta

A considerable public interest in the fate of the Peace-Athabasca Delta, and in the results of the intensive study by the Federal-Provincial Task Force has acted to keep the Authority attentive and alert to the possible requirement that a further public examination of this important water management problem should be undertaken.

### 3.2.4 Surface and Underground Waters

In its first Annual Report the Authority expressed concern as to the state of knowledge in respect of the many variables affecting surface waters in the Province. The Authority suggested three broad areas in which it felt additional information was needed. These included: (1) a general review of the stability of the hydrological cycles with particular reference to surface water levels as well as the subsurface water tables; (2) a study of the effect of long-term withdrawal of water from the surface systems. This would involve any exchange between surface and deep strata water by artificial means such as water injection for enhanced oil recovery, solution mining, and deep well disposal of noxious waste waters. (3) An investigation into the question of whether there is movement between deep strata and sub-surface and surface water, and if so, the extent of that movement both horizontally and vertically; the possibility of an exchange between the two types of water and the consequences of such an exchange.

The Authority feels it prudent that attention should be directed towards obtaining information on the probably long-range effects of such practices in water use management.

## 3.3 SCHEDULE OF MAJOR HEARINGS

The program of public enquiries the Authority now has underway is being undertaken at the request of the Government. The Proceedings of these hearings and the Authority's Report and Recommendations on them are tabled in the Legislative Assembly by the Minister of the

Environment. The schedule of the major hearings now in preparation follows.

Schedule of Major Public Hearings

1. Technical Sessions on Environmental Effects  
of the Use of Pesticides, Herbicides and  
Hard Chemicals March, 1973
2. Land Use and Resource Development in the  
Eastern Slopes: Spring and  
Summer, 1973
  - a. Oldman River Basin
  - b. Bow River Basin
  - c. North Saskatchewan River Basin
  - d. Athabasca River Basin
  - e. Smoky River Basin
3. Environmental Effects of the Use of  
Insecticides, Pesticides and Hard  
Chemicals Fall, 1973
4. Forest Utilization and Its Environmental  
Effects Spring, 1974
5. Impact on the Environment of Oil and  
Gas Exploration, Development and Trans-  
portation Fall, 1974
6. The Urban Environment Spring, 1975



## **PART II**



## **1. SUMMARY OF ACTIVITIES**

In 1972 the Amendment to the Act expanded the membership of the Authority to four. However, by the end of the year the additional appointment had not been made, and since the Vice-Chairman resigned to take other duties with the Federal Government, the effective membership of the Authority was two for most of the year.

During the year three major public hearings were held, and the Report and Recommendations on the first hearing of the Authority were completed and presented to the Government. A concise summary of the reports and recommendations on three public hearings are contained in this report. They were: (1) Surface Mining, (2) Archaeological and Historical Resources in Alberta, (3) Sulphur Extraction Gas Plants. The Report and Recommendations on the Effects on the Environment of the Operations of Sulphur Extraction Gas Plants was not completed within the year of report. The Proceedings of the hearings and the Report and Recommendations of the Authority are available upon request.

The Public Advisory Committees to the Authority, including the Science Advisory Committee, give advice to the Authority which in turn passes it on to the Minister and to the Government. The Authority reports on the work of the Advisory Committees in its own Annual Report and this is to be seen in Part 2, Chapter 3. The Public Advisory Committees also prepare Annual Reports which describe their own activities in greater detail. These are available from the Authority upon request.

The Act also requires the Authority to show in its Annual Report any reports and studies prepared during the preceding year at the request of the Minister. These are shown in Part 2, Chapter 4.

## **2. REPORTS AND RECOMMENDATIONS ON PUBLIC HEARINGS**

## 2.1 RESTORATION OF WATER LEVELS IN COOKING AND HASTINGS LAKES

The Environment Conservation Authority wishes to make clear its view that the need for restoration and stabilization of the water levels in the lakes and improvement of the very bad quality of the water, has been firmly established by the hearings. Moreover, the restoration and conservation of the entire Cooking Lake Moraine Watershed is clearly desirable and is strongly supported by the public and by the Authority.

With this in mind, the Authority proposes recommendations for comparative studies that will set the Cooking Lake Moraine Watershed into an appropriate provincial context. At the same time, it proposes recommendations for comprehensive studies that will deal specifically with the development of the Cooking Lake Moraine itself. These studies should proceed concurrently and be initiated as soon as possible.

### COMPARATIVE STUDIES

#### 2.1.1 Lake Levels

Study should be given to the levels of major lakes in the Province; to the extent of variation of the levels in these lakes in recent times; to the reasons underlying such variations; and to an identification of the benefits that the lakes can provide to the Province if their levels were to be stabilized at an appropriate elevation by a suitable diversion of water into them. An inventory of major lakes, restoration costs when applicable, and the magnitude of the benefits that could thereby be provided particularly in recreational terms for urban centres, is recommended as an appropriate way of identifying one aspect of the priority to be attached to the rehabilitation and recreational development of any particular lake or group of lakes.

#### 2.1.2 Recreation Needs

An estimate be made of the future need for urban recreational sites with, for the present purpose, an emphasis on the Edmonton area, so that a comparative judgment can be made as to the desirability of developing the Cooking Lake Moraine Watershed



as against other plausible sites to the south, west and north of this major metropolitan area. It is recognized that fiscal priorities may be associated with non-recreational purposes. However, it is important to have a balanced judgment among related developments of water-land complexes to be used for recreational purposes by residents and by tourists, and the recommendation is made with this intent.

## COMPREHENSIVE STUDIES

### 2.1.3 Comprehensive Study of Area

It is recommended that a detailed study be made of the Cooking Lake moraine watershed to fully determine the benefits that may be obtained, to resolve problems that have been revealed but not settled by the hearings and studies to date and to prepare specific recommendations that will then be exposed to public hearings. It is proposed that the several levels of government whose interests are involved be jointly concerned in this detailed study in ways appropriate to their responsibilities.

### 2.1.4 Committee Structure

It is recommended that two committees be set up as follows: -

#### 1. PROVINCIAL COMMITTEE

A Provincial Committee to be established as a Task Force of the Conservation and Utilization Committee to which appointments are also made from the Cities of Edmonton, Camrose and Wetaskiwin, the County of Strathcona and the Edmonton and Battle River Regional Planning Commissions.

The terms of reference for this Committee would be as follows: -

- [1] The entire Cooking Lake Moraine area including Elk Island National Park as well as Beaverhill Lake

and its environs to the east of the Moraine totalling 1500 square miles, are to constitute the area of study.

- [2] A water quality study be done to determine the ultimate quality the water in the lakes might have when the levels are stabilized, depending upon the part of the river from which the diversion is made, whether below the city or above it, and depending on the treatment of the water and the manner of its withdrawal from the river. Included in this would be the effect on the quality of the water of dredging the bottom muds of the lakes, the clearing of beach and swimming areas, and the flooding of lands now in vegetation.

Further problems to which consideration should be given include: -

- (a) the ensiltation of the lake through waters brought in from the rivers, and steps that might be taken to avoid this impairment.
  - (b) a judgment as to the color of the waters, as well as their chemical content when stabilized.
- [3] An integrated land use plan be developed for the entire area, with particular attention being paid to:
- (a) restoration and stabilization of lakes at optimum water levels.
  - (b) the increasing needs of the population for recreation.
  - (c) the desirability of facilities for environmental education.
  - (d) the land capability as determined by the Canada Land Inventory.
  - (e) the preservation of Archaeological and Historical resources.
  - (f) the present state of land tenure in the area.

- [4] Impact on the region of suitable forest management practices be investigated.
- [5] A determination be made of the quantity, locations, mechanism of acquisition, and cost of the lands required for public use including protective forests if any.
- [6] A further study be conducted on the need and mechanism of water importation with regard to:
  - (a) its quality and its compatibility with the lake eco-systems
  - (b) water from the same pipeline for domestic use and whether it should be delivered directly into Cooking and Hastings Lakes or into the lakes to the south of the Moraine.
- [7] Identify and design the weirs and other water control devices for the stabilization of the levels of the separate lakes.
- [8] Recommend means for the financing and management of the project.
- [9] Review the functions of Elk Island National Park, Miquelon Lakes Provincial Park and all other Crown lands in the designated area.
- [10] Include any other considerations which, in the opinion of the Committee, are of importance to the proper functioning of the project.
- [11] An early priority of the Provincial Committee should be the determination of the lands which will be needed to ensure public access to, and public participation in the benefits expected from the project.

The public interest can be protected by

  - (a) establishing the authority of a Minister of the Government over the area by invoking Section 15 of the Department of the Environment Act.
  - (b) establishing the right to acquire the necessary lands by invocation of Sections 25 and 26 of the Public Works Act.

## 2. LIAISON COMMITTEE

A Liaison Committee to be established between the Federal and the Provincial Governments that would have membership from the Provincial Committee above and also from the Federal Committee which is now working on plans for the Elk Island National Park. This Liaison Committee would inform each governmental committee of the others' plans but not be directly involved in the planning for the Provincial part of the Cooking Lake Watershed Moraine.

The end result of the Committee's work would be a comprehensive development plan for the area and this should be made public and form the basis for a further series of Public Hearings prior to its possible implementation.

Finally, the development of the area could well be treated as a Pilot Project in Environmental Management and suitable publicity and public demonstration devices be incorporated from a very early stage, to enable the maximum educational benefits to be derived from the project including the study phase.

## 2.2 THE IMPACT ON THE ENVIRONMENT OF SURFACE MINING IN ALBERTA

The objectives of the Authority in holding public hearings on surface mining have been stated earlier: "to advise the Lieutenant Governor-in-Council on preventive and reclamation procedures that are sufficiently adequate to assure that such resource developments may be conducted in such a fashion that permanent environmental damage does not result therefrom."

Minimizing environmental impacts of surface mining activities and progress towards preventing permanent environmental damage may be accomplished through implementation of recommendations made by the Authority in this report. Two main phases should be recognized. First, prevention or reduction of temporary environmental damage may be largely achieved by comprehensive planning. Second, restoration of a suitable post-mining land use may be accomplished by adequate reclamation procedures.

As stated above, activities which result in permanent loss of productivity of the land are intrinsically undesirable. Reduction or elimination of undesirable environmental impact and restoration of acceptable land use after mining has ceased, should be recognized as a public benefit now and for the future. This concept is fundamental to the terms of reference within which the Authority carried out the public hearings concerning the environmental impact of surface mining. Such a concept is also central to the recommendations contained in this report.

The following recommendations presented by the Environment Conservation Authority, concerning surface mining in Alberta, arise from several sources. First, Authority members and staff have assembled a considerable body of information, by carrying out field trips or from available literature. Second, a consultant was commissioned to carry out an investigation, and has supplied the Authority with a comprehensive situation report. Third, resource personnel from several Alberta Government departments have assisted the Authority by making information freely available. Fourth, a position paper on the principles of reclamation legislation was prepared at the request of the Minister of the Environment by a Task Force of the Conservation

and Utilization Committee and made available by the Minister for publication by the Authority. Finally, with access to the above information the public of Alberta has presented to the Authority its arguments, concepts and recommendations.

The Environment Conservation Authority is of the opinion that its recommendations take account of the best technical information presently available on surface mining in Alberta and elsewhere. The Authority suggests that its recommendations also reflect the weight of public opinion, as indicated by the submissions made to the Authority at the public hearings on the environmental impact of surface mining in Alberta and by statistical sampling of public opinion throughout the Province. From these sources, desirable reclamation objectives can be stated. It is, however, clear that the state of reclamation knowledge is not complete, nor are reclamation technologies well enough known or well enough developed to apply even the present level of reclamation knowledge to surface mining operations in the province immediately. The proposed recommendations describe objectives to be reached. The time required to reach each objective may vary.

#### 2.2.1 ENVIRONMENTAL IMPACTS

##### 2.2.1.1 Surface Reclamation

##### 2.2.1.2 Surface Uses

Restoration of original surfaces and original surface uses may or may not be physically or economically possible as a result of surface reclamation procedures. Alternatives may have to be considered that do not involve the use to which a piece of land was originally subjected.

#### Recommendations on Surface Restoration

- (1) Where surface mining is carried out on productive farmland, restoration of equally productive farmland should be the primary reclamation objective.
- (2) In non-agricultural areas, where the original condition cannot be restored, the primary objective of reclamation should be creation of a new condition of equal or greater value than the original condition.



- (3) Where restoration of the original condition would produce a less valuable result than an alternative new condition, the alternative condition should have priority if the economic balance between the cost of reclamation and the productivity of the reclaimed land is favourable.

#### 2.2.1.3 Reclamation and Final Land Use

Involvement of the eventual land user in the procedure leading to reclamation is important, as an essential part of the planning process. In addition, reclamation legislation and regulations, as well as reclamation standards, should apply equally on privately owned land and on Crown land.

#### Recommendations Concerning Final Land Use

- (1) Coal mining operations should be clearly separated from eventual ownership of land, in order to ensure that surface mining does not have the effect of removing resident farmers from the lands as well as destroying community values which are dependent on the resident farm population.
- (2) Where the value of any site will be permanently and substantially less following mining than it was before, this factor should be important in determining whether the mining operation should be allowed on that site.
- (3) The shortest time practicable should elapse between opening a surface mine and reclaiming and revegetating the site prior to abandonment. Normally, this time span should not be permitted to exceed two years.

#### 2.2.1.4 Surface and Sub-surface Materials

Surface reclamation involves not only the exposed surface of the land, but also the clay, gravel, sand or rock strata which lie beneath the surface. In addition, coal may lie in more than one deposit, either on relatively flat seams (in most prairie deposits) or in twisted, bent or fractured geologic strata (common to foothills and mountains). Evidence does not appear to be available as to physical and chemical effects of disturbances on subsurface materials, transposed from a reducing to an oxidizing environment.

### Recommendations on Surface and Sub-surface Materials

- (1) Studies are recommended concerning the physical and chemical changes which may occur in exposed soils or rocks following disturbance of surface mining.
- (2) Increased research is recommended on the factors affecting horizontal and vertical movement of groundwater and the changes in its ionic constituents, following surface disturbance and reclamation.
- (3) Research is recommended on the factors affecting potential for revegetation of reclaimed land, particularly in relation to (1) and (2) above.

#### 2.2.2 Watershed Integrity

Adequate protection of watersheds and continuation of their ability to deliver a reliable quantity of water of good quality, has obvious importance to any area. In Alberta, almost all communities of significant size rely on streams for their water supply. At the public hearings when presentations were made by major cities, examples were frequently cited of potential or actual impairment by surface mining activities of the quality or quantity of water in the domestic supply to these centres of population.

### Recommendations on the Protection of Watersheds

- (1) Where surface mining operations are undertaken which involve construction, exploration or surface disturbance, all reasonable precautions should be employed to protect the integrity of watersheds.
- (2) Prohibitions against mining in selected sites should be used to protect waterfalls of great beauty, or to protect sections of streams which might be designated as "wild rivers".
- (3) Standards should be set for construction of roads and for maximum angles of spoil banks to minimize slippage into watercourses. Such standards should apply to active, as well as to reclaimed, abandoned sites.

- (4) As a general rule, exploration roads and trenches, as well as all haulage roads and temporary equipment storage sites should be reclaimed and revegetated immediately they are no longer required, in order to prevent or to minimize surface erosion and siltation of streams.
- (5) All coal handling facilities should be constructed and located in such a fashion to minimize air or water pollution from activities associated with extraction, haulage, washing and cleaning, or storage and loading for shipment. Of particular concern should be coal dust involved with extraction and haulage, and coal fines associated with treatment plant and loading facilities.
- (6) Protective emergency structures with good safety factors should be installed between any coal treatment facility and any watercourse, to prevent pollution of watercourses, particularly by coal fines and wastes during emergency conditions such as sudden, heavy rainstorms or unexpected snow melt, or breakdown of coal washing facilities.
- (7) Particular care should be used in locating coal-powered thermal-electric plants in order to minimize the impacts of discharge of hot water, stack effluents such as gases and fly ash and dissemination of coal dust from pit operation and haulage.
- (8) Investigation should be made as to the possible beneficial uses of cooling water from thermal power plants, as well as the detrimental effects of hot water effluents on lakes or streams.

### 2.2.3 Conflicts With Other Resource Values

A variety of circumstances may complicate resource extraction such as surface mining. Renewable resources such as water, timber and agriculture may depend totally on the surface for existence, and surface reclamation is already recognized as the device through which surface productivity can be restored. Other cases may exist however, where another non-renewable resource may be exposed when a surface mine is first opened, or during its

operation. Examples include the exposure of deposits of gravel, sand, clay or other valuable materials which may lie in close proximity to coal seams. These resources may be moved, inverted, polluted by coal fines, or otherwise altered, to render them unuseable. In other cases, there may be commodities mixed with coal whose presence was unknown until the coal was extracted, but whose value could be highly significant if recovery of these materials is effected.

The general principle is proposed that where in the course of a resource development, additional resources are revealed, cooperative attempts should be made to outline and define these additional resources. Furthermore, cooperative attempts should be made to achieve maximum benefit from all available resources, rather than the single development of any one at the expense of any of the others.

#### Recommendations Concerning Conflicting Resource Values

- (1) Where any one developer proposes to exploit more than one resource, the proposal for multiple resource development should be assessed for approval on the basis of maximum benefit from these resources.
- (2) Where two or more developers or owners of surface or sub-surface resources are involved separately or jointly in a proposal for development of more than one resource in the same location, a joint plan for the integrated development of the several resources should be submitted for approval.
- (3) Where any resources are identified, but are not to be developed, an assessment should be made of the values of the resources which may be disturbed or destroyed. Where possible, steps should be taken to minimize such losses, to protect the value of the undeveloped resources, or to develop them simultaneously or sequentially.

#### 2.2.4 Competitive Land Use

##### 2.2.4.1 Land Use in Upland Areas

Aside from conflicts with other resource values, mentioned earlier

a growing conflict seems evident between surface mining on the one hand and tourism and recreation on the other. The foothills and mountains of Alberta are widely recognized and heavily used as prime tourist and recreation areas. Tourism and recreation are generally recognized as labor intensive activities which are not resource consumptive; surface mining is relatively low in labor intensity and consumes the resource on which it is based. The life of a surface mine is relatively short, not generally exceeding 20 years; tourism and recreational activities have a life span related only to the continuing supply of satisfactory recreational experiences.

In Alberta, a large proportion of the tourism and recreation industry is comprised of high density activities, carried out in areas easily accessible by car. Occasionally such activities may benefit from increased access provided by roads built to service mining, but generally tourism and recreation values are lowered by surface disturbances caused by exploration and mining. However, low density activities, based primarily on values associated with solitude, unspoiled wilderness, remote lakes and streams, vistas of rare or unusual beauty and similar attractions, are severely and immediately impaired by industrial exploratory activities or man-made surface disturbances of any kind.

It may be possible for mining operators to create new amenities at the conclusion of mining activities. Lakes may result from pits not completely backfilled; big game range may result from suitable surface restoration. In any case, however, the usefulness of a new condition will be determined by its location with respect to contiguous land use and its ecological suitability in relation to the surrounding area.

The foothills and mountains of Alberta represent a unique asset of great value to the Province. It should be recognized that the long-term value of Alberta foothills and mountains will depend to a considerable degree on the kinds and extent of resource use permitted in the area, and the environmental management practices followed in their development.

General Recommendations for Upland Areas

- (1) Bonding or some other suitable financial guarantee of performance should be required of all coal mine operators or companies, to ensure that under regulations, pre-planned operational and reclamation standards are achieved.
- (2) Before extensive exploration is carried out, a preliminary environmental impact statement should be submitted by the developer, including a proposed exploration plan.
- (3) Before full-scale mining commences at any site, a fully developed reclamation plan should be submitted, which shows in detail, not only the plans for surface restoration and revegetation, but also the areas of temporary spoil storage
- (4) Because restoration of an original condition after mining is improbable in foothills and mountains, reclamation should include consideration of different uses to which sites can be put, which are of equal or greater value than was the original condition.
- (5) It is recommended that in the pre-planning phase the impact of a proposed surface mine operation take into account the effects on tourism and on the recreation potential of the area.
- (6) Where conflicts between surface mining and tourism and recreation are irreconcilable, they should be resolved in favour of the larger and longer-lived social and economic benefits, taking into account the measureable social and economic values for each activity in a community.
- (7) It is recommended that decisions to permit or restrict surface mining on a particular site should be based on comprehensive analyses of social costs and benefits which can be assigned to the individual operation.



#### 2.2.4.2 Land Use in Plains Areas

Community benefit of surface mining in plains areas is substantially different than that in foothills or mountains. Large acreages of potential mine sites in the plains will lie on patented land. Most facilities constructed to handle prairie coal will contribute directly to revenues of counties or municipal districts. Coal mined in the plains presently is used almost exclusively for thermal generation of electricity, with the exception of a few thousand tons per year used directly for heating, or other minor uses. Assessed value of thermal electric generating stations may be responsible for the major revenue of rural municipalities. Electric power generated from the use of sub-bituminous coal is now used entirely in Alberta, but could become a significant export commodity.

A high per capita consumption of energy in Alberta will continue for the foreseeable future and it is certain that the coal resources of the plains will play an important role in utilization of energy resources in total. Development of prairie coal resources will likely proceed for some time using the technique of strip mining. Optimum development of sub-bituminous coal resources for Alberta will require that maximum utilization of coal deposits be linked to minimum surface damage, through the application of the best possible conservation principles, and the prompt adoption of each new improvement in mining and reclamation technology.

Because of apparent ease of reclamation on generally flat prairie lands, and because of their presently productive surface uses, the highest practicable reclamation standards should apply. The amount of recoverable coal lying beneath the surface varies and may be as high as several thousand tons per acre. Surface reclamation costs have not yet been analyzed out of the total cost of planned and integrated strip mining operations, but estimates indicate that reclamation costs may amount to a few cents per ton of coal mined.

Recommendations Concerning Effects of Surface Mining on Land Use  
in the Plains.

- (1) An impact statement should be submitted with an application for operation of a surface mine, which identifies and quantifies the uses and value of the land to be mined. Of particular importance is the necessity to identify and quantify pre-mining agricultural uses and values.
- (2) The impact statement should provide an evaluation of the post-mining use of the area, and should involve the ultimate user in the plan as early as possible.
- (3) The impact statement should include a comprehensive reclamation plan, which should be approved not only by a Provincial regulatory agency, but also by the regional and local authorities and the landowner.
- (4) First priority in reclamation should be assigned to the conservation and replacement of productive topsoil, so that productive agricultural land can be returned to a level of use and productivity which would be no less after mining than before mining commenced.
- (5) If deemed beneficial by the landowner, the community and the regulatory agency, tourist and recreational developments could be incorporated into reclamation plans. Such developments might include golf courses, snowmobile area, fishing ponds, waterfowl marshes or wildlife areas, but only where the land was originally unproductive of significant agricultural values.
- (6) As a summary recommendation, it is strongly suggested that every effort be extended by Provincial, regional and local authorities to protect and maintain the integrity of rural communities, and to resist any tendency toward the permanent withdrawal of productive farmlands from agricultural use and the subsequent departure of farm families from rural communities.

### 2.2.5 The Importance of Coal Mining in Alberta

Almost from the first settlement of Alberta, coal has been an energy resource of primary importance. Mining of shallow deposits in the 1800's provided early home heating, and from the beginning of this century had grown in importance in home and institutional heating and as a source of power for trains and ships. Natural gas use over the past three decades has caused a short hiatus in development of coal as an energy source, but gas reserves may not be sufficient to satisfy energy demands to the end of the present century. While coal is no longer of significant use to power trains and ships, its use and potential in thermal electric generation is growing rapidly.

In Alberta, two principal kinds of coal deposits are of value: the extensive sub-bituminous deposits of the prairies and the bituminous deposits of the foothills and mountains. Sub-bituminous coals now are used almost entirely in thermal electric generating plants; the bituminous coal is exported as coking coal to foreign markets. Because of differing physiography of the areas containing coal deposits, as well as completely different markets and economic outlook, surface mining of coal on the prairies poses substantially different economic, social and environmental problems than in the mountains and foothills.

#### 2.2.5.1 Surface Coal Mining in Plains Areas

The basic ingredients of community benefit from strip mining in the plains are quite different from that in foothills and mountains. The whole circle is turned in prairie mining for sub-bituminous coal, from extraction through final use, while only an arc of the circle appears in foothills or mountain mining for bituminous coal, which is transported out of the Province, and sold on the export market. Moreover, partly because of the climate, there is an indispensable requirement for high energy consumption per inhabitant in the prairie areas that makes it imperative that the low cost, technically accessible sub-bituminous coals of the prairies be retained and utilized for the population of Alberta as time passes.

The generation of thermal electric power from Alberta's prairie coal deposits, supplemented by hydro power, may well provide the major share of Alberta's energy needs now and in the future. If readily accessible power sources are exhausted, it is doubtful if a population can be preferentially maintained in prairie areas. At the same time, surface mining for energy fuels could be hazardous for the agricultural productivity base of the Province, which is also totally undesirable.

It is thus imperative that the coal resources of the prairies be developed, and it is probable that economics will dictate that they be developed by strip mining techniques. It is equally imperative that agricultural productivity be maintained and that surface reclamation procedures be adopted that fully restore, and when possible, enhance the original agricultural productivity of the land which has been disturbed.

Fortunately it seems that the two imperatives can be met through planning, and by the application of the best mining, reclamation and agricultural technologies.

As natural gas and oil reserves are depleted, the habitability of Alberta out of its own energy resources eventually will depend directly on its coal reserves. These can be used to produce coal, gas and electricity to provide power and heat for homes, institutions and various industries. Supplements to coal as an energy fuel may be provided by hydroelectric or even nuclear plants, but coal will steadily increase in importance as the primary energy source in the Province.

Prairie surface mining and development of associated thermal electric plants constitute a priority requirement for Provincial planning. The mechanics of surface mining on the prairies is relatively straightforward and predictable, as is apparently, reclamation of stripped areas. However, important problems such as subsidence of restored surfaces, drainage and alkalinity still remain. It is possible that several hundreds of thousands of acres of prairie land will be stripped in the future. Reclamation objectives of singular clarity are required, and should be outlined through research, defined by legislation and implemented by regulations.

Recommendations Concerning Prairie Surface Coal Mining

- (1) Early policy planning should be commenced by Government, to ensure that prairie coal mining is included in an integrated land management pattern for all prairie areas under which coal deposits are proven or inferred.
- (2) Bonding or some other suitable financial guarantees of performance should be required of all coal mine operators or companies. to ensure that under regulation, pre-planned operational and reclamation standards are achieved.
- (3) Financial guarantees could be progressively released as reclamation proceeds, but should not be released entirely until five years after first planting of reclaimed land.
- (4) Checks should be made regularly by Government inspectors as to the level of productivity attained and the stability of surface and subsurface materials, both chemically and physically, over the reclamation period.
- (5) A holdback of a portion of a performance deposit, perhaps 10 percent, should be used as insurance of successful revegetation of a reclaimed mine site, and should not be released until an appropriate inspection has revealed a reclamation level in compliance with the regulations.
- (6) Topsoil and remaining overburden should be removed, separately conserved and replaced in a manner which promotes restoration of original surface productivity.
- (7) The size of open pits in prairie mines should be restricted to the minimum necessary for effective operation of the mine.
- (8) As a general operating principle, the time lapse between opening a trench and commencement of surface revegetation should not be more than two years, and where possible, less.
- (9) Surface reclamation regulations should include the provision that equipment necessary for reclamation not normally be removed from a surface mine site until satisfactory topsoil replacement has been effected.

#### 2.2.5.2 Surface Coal Mining in Foothills and Mountains

Evidence was presented at the public hearings, and substantiated by field observations by Authority members, that operation of surface mines in mountainous terrain can pose very great difficulties. Exploration, including road building and trenching, leaves widespread scars, which are difficult to repair. Disposal of overburden from open pits is awkward for mine operators, often because of steep slopes or lack of room for construction of spoil piles. Erosion and siltation commonly may be observed, and evidence of coal fines spread on the landscape or entering streams is relatively common in or near open pits, along haul roads, or adjacent to coal treatment plants. Of all the foothills and mountain surface coal mining sites visited in Alberta and British Columbia, only one had clear evidence of acceptable physical reclamation, but even that site had not yet had time to prove a permanent revegetation.

It is apparent that problems both of surface mining and environmental protection are more complex in foothills and mountains than on the plains. Mining of coking coal in the foothills and mountains is for export, and only a portion of the gross value is returned to Alberta citizens. It may be that waste coal from treatment plants can be of increased importance as fuel for generation of thermal power in the future but at present it constitutes a relatively small proportion of coal used within Alberta.

Coking coal deposits are highly variable in location and are difficult to assess from an engineering point of view. The sale of coking coal is subject to the vagaries of export market changes, and thus mining of coking coal appears to offer higher economic risks than that of thermal coal. Finally, the possibilities for reclamation of sites in foothills and mountains are limited by a variety of factors. Some of the factors which make satisfactory reclamation difficult, or in some cases impossible, are frequency and amount of precipitation, altitude of site, slope of terrain, latitude and annual thermal regime, vegetal cover by amount and type of plant and visual impacts. These factors taken together, make it possible to define a recognizable ecological area or zone of sensitivity in which a site may be located. Location of a site often pre-determines



whether or not reclamation can be done with any assurance of success, following surface disturbance.

An actual surface mine operation may not cause as serious or widespread environmental effects as exploration activities which precede the establishment of the mine. Disturbance of wildlife, destruction of habitat, creation of erosion gullies and siltation of streams are some of the consequences of exploration activities in foothills and mountains.

In summary, the recommendations concerning foothill and mountain surface mining recognize that radically different land management criteria apply to foothills and mountains than those which may be applicable to prairies. Regulations should therefore reflect these wide differences, and recognize that probability of permanent damage is high in foothills and mountains, and that a different condition will almost always result from reclamation following surface disturbance of any kind.

#### Recommendations Concerning Surface Mining in Foothills and Mountains

- (1) As a general recommendation, it is strongly suggested that the comprehensive, pre-development investigations required of the developer by appropriate agencies or departments of government place strong emphasis on site investigation and selection in foothills and mountains.
- (2) Where an application is received to open and operate a surface mine in a foothill or mountain area, it is recommended that a detailed engineering plan be required, signed by a registered professional engineer of Alberta. Pre-mining contours should be shown on the plan, plus details of proposed disposal and storage of spoils during the mining operation, and final slopes and contours of the physically reclaimed site.

- (3) Reclamation standards for foothill and mountain areas should recognize that seldom, if ever, will a mining site located in steep terrain be returned to the state in which it existed before it was mined. For this reason, it is recommended that present uses, as well as alternative post-mining uses of the site, should be identified before any approval is given to explore or to mine the site. Furthermore, the extent to which post-mining use of the area can be shown to be of inferior value to pre-mining use should be one of the factors in determining whether surface mining should be permitted or not.
- (4) Because the results of mining activities in foothills and mountains can have detrimental effects on watersheds for considerable distances downstream, the extent of this risk should be assessed for each site and be one of the factors in determining whether surface mining should be permitted or not on that site.

## 2.2.6 Integrated Planning and Site Selection

### 2.2.6.1 Present Operations

With respect to surface mines already in operation, it is not possible to develop a coal deposit with comprehensive, integrated planning from first exploration to final reclamation and release of the site to post-mining use. However, it appeared from submissions at the hearings that a public consensus exists, and the coal industry agreed, that an attempt should be made to phase in planning of ongoing operations to new regulations, wherever possible. Consideration must be made for the fact that ongoing operations were planned and mining is presently being carried out under older regulations which may be fully met by the mining company, but which may not fit new legislation, regulations or enforcement standards.

#### 2.2.6.1.1 Site Selection

A site may have been selected and approved earlier, which may now, under new legislation, be undesirable. A legislative device which appears feasible, under which such an operation could be given review, suspended if necessary, or become the subject of a public hearing, is the stop order procedure under the Department of the Environment Act. Aside from existing or new legislation, time limits could be agreed to, beyond which surface mine operations could not extend without approved operational and reclamation plans.

It is important to emphasize that existing mining operations are carried out by companies within a legal framework, which has also received policy approval from a variety of Government departments or agencies. Any alteration in their operations by new directives should be carefully thought out, but obviously new regulations ultimately must be enforced.

#### Recommendations Concerning Approval or Rejection of Sites

- (1) A regulatory device under new legislation should be provided, to enable the smooth transition of existing surface mining operations into compliance with new regulations.
- (2) Use of new legislation to regulate, alter or suspend a present surface mining operation should provide sufficient notice to the operator and have due regard for the fact that the operation had been legally correct under old legislation.

#### 2.2.6.2 Future Operations

A general agreement appeared in submissions to the public hearings that integrated planning of the total mining operation should occur, including exploration, drilling, mining, hauling, processing and reclamation. Industry officials stressed the need for government approval of the total operation, in order that all mining companies be treated alike. The need for restricted areas where mining would not be allowed was the most frequently expressed recommendation in submissions from the public.

#### 2.2.6.3 Site Investigation and Classification

Of particular importance are mountain or foothills sites with coal deposits which bear a significant locational relationship to parks, wilderness areas, outstanding geographical features, key drainage basins and critical wildlife habitat, particularly wintering areas, as well as areas of great beauty or of archaeological or historical importance. Similar importance can be attached to sites on the prairies, but it is likely that in these areas, agricultural values will be of higher priority. Sites which occur in areas of great sensitivity clearly will be those concerning which early decisions should be made as to whether or not they should be reserved entirely against exploration and mining activities. It should be recognized as a matter of principle that a site within any area of productive farmland on the prairies, or a site at an altitude of 5000 feet or higher in foothills or mountains, be given intensive scrutiny for environmental impact.

#### Recommendations Concerning Site Selection

- (1) Investigations toward the identification of sites that require protection should be ongoing activities in Government departments.
- (2) Site sensitivity might be judged initially on an area basis, and finalized by field inspections, to identify and classify highly sensitive local areas.
- (3) If sites cannot be developed in areas of great sensitivity without permanent impairment of their values, then these areas should be entirely reserved against exploration and mining activities.

#### 2.2.7 Reclamation Research and Technology

Surface mining methods result in the efficient extraction of sub-surface non-renewable resources. However, the long-range effects of severe surface disturbances may still be partly unpredictable, even when apparently satisfactory surface reclamation procedures are followed.

Strip mining in good farmland can, with good reclamation procedures, restore a surface that contains much of the original topsoil. The materials below the restored surface will however, have been inverted, moved and mixed in many ways. Clays which had been deeply buried may now be near the surface, and clays and gravels may be intermingled. In addition, the coal deposits have been removed beneath the new surface, whereas in adjoining areas, the original coal deposits still exist.

There is apparently no knowledge at present which describes how surface disturbances might affect the movement of waters through the restored land, both vertically and horizontally into, or from adjoining undisturbed areas. Apparently also, there is no knowledge to indicate how the chemical content of these waters might have changed, either through the solution of divalent metallic ions from the newly exposed clays, or because of the absorption of metallic ions from the waters by these same previously deeply buried materials. The absorptive and desorptive powers of these clays are known, but the net effect on the percolating waters is not. Of direct and serious concern is the lack of knowledge concerning the effect on productivity of the newly restored surface, even if that surface consists of topsoil which has been carefully segregated and replaced.

A variety of problems exists which relate to reclamation in the several regions, and which require research to establish and elucidate relevant and important facts. Examples of some of these problems are surface subsidence, species selection and adaptation, and soil rehabilitation. In addition, even where research has provided information which scientists require, the question of application of this knowledge remains. It is clear that the employees of mining companies, as well as the eventual users of the reclaimed land will need to have available to them the knowledge and know-how that reclamation procedures will demand. Government inspectors who will have final responsibility for assessing effectiveness of reclamation procedures will also require qualifications, training and access to reclamation information.

Recommendations Concerning Reclamation Research and Technology

- (1) Reclamation research projects should be undertaken jointly by the Federal and Provincial Governments and by industry in cooperation with the universities to establish the basic information that is needed to guide reclamation practices.
- (2) A reclamation manual should be prepared and published that describes the best procedures known as to reclamation of strip mining sites on the prairies as well as reclamation of surface mining sites in the foothills and mountains. The reclamation manual should be updated annually or at regular intervals, as technology improves and as research reveals new information.
- (3) Training programs in reclamation technology should be initiated at technological institutes or vocational schools, so that training can be given to individuals, including heavy equipment operators who might be employed in reclamation work. It is essential that well qualified people be employed in every phase of reclamation, from first removal and segregation of topsoil, to physical restoration of the surface, and finally, to replanting and revegetation for subsequent management of the site.
- (4) Some old, poorly reclaimed surface mines sites, in mountains, foothills and prairies should be acquired by the Government, and used as training sites and experimental areas for reclamation technology training and research.
- (5) Licensing of reclamation technologists should be considered, both for those employed by coal mining companies, and for Government inspectors who will have the responsibility for approving reclamation procedures carried out by mining companies.
- (6) As a final recommendation, it is suggested that the Authority's



Public Advisory Committee on Environmental Education be asked to review the potential for offering reclamation technology training in technological institutes, community colleges and universities, both at the technician level and at the degree level.

## 2.2.8 Energy Requirements, Economics and Social Benefits

### 2.2.8.1 Thermal Coal and Utility Needs

Mining of thermal coal was discussed earlier, but is considered by the Authority to be of such importance to the Province that it should again be emphasized. Aside from the consideration which must apply to successful reclamation, the question of economic benefit to the Province is of paramount importance. Thermal coal may exist in such quantities in some deposits as to have a value of many thousands of dollars per acre. All thermal coal being mined in Alberta is presently being used by Alberta utilities, or in a minor way, in coal fired furnaces for direct heating. With depletion of natural gas reserves and a limited hydro potential, Alberta thermal coal appears to be potentially the best single energy source available for the future.

Energy costs are highly variable across North America, partly because of the location of energy sources, such as hydro, natural gas and coal. Even a cursory examination of rate structures for utilities supplying electricity for domestic and industrial purposes suggests that Alberta constitutes a low cost energy island, surrounded by high cost energy supply areas. The mill rate value of thermal electricity in Alberta is considerably below the Canadian, or North American average.

In the generation of thermal electricity, the major environmental disturbance arises from the operation of strip mines, whereas the major benefit to the community arises from the electrical generating plant. The benefits to Alberta of the development of prairie coal deposits through their conversion to electric energy or gas have great importance in the economic future of the Province. As such, they should be carefully evaluated.



Recommendations Concerning Sub-bituminous Prairie Coals

- (1) In order to maximize community benefits from surface mining of prairie coals, as against environmental disbenefits, all efforts should be made to convert coal to electric energy or gas, before its use, inside or outside Alberta.
- (2) It is recommended that attention be given and appropriate studies be made on a continuing basis of the gasification and other ways of utilizing sub-bituminous coals as energy resources.
- (3) The relative economic advantage or disadvantage to the Province of Alberta of exporting any quantities of thermal coal to other parts of Canada should be compared with the use of the coal within Alberta to generate electric power for use within the Province and for export.
- (4) Reclamation costs which are shared with other operating costs should be assessed on a proportionate basis. The total reclamation costs calculated in this way should be used to assist in setting performance guarantees and their progressive release.
- (5) All reclamation costs should be included as part of the mining costs and should be included in the market price of the coal.
- (6) The environmental, social, economic and employment benefits and disbenefits of developing prairie thermal coal deposits should be analyzed and published as part of the comprehensive planning required of Government.
- (7) In summary, the planning of strip mining to develop prairie thermal coal deposits should be integrated into a comprehensive land management program.

### 2.2.8.2 Bituminous Coal and Export Markets

Difficulties encountered in mining bituminous (coking) coal deposits of Alberta were presented in detail in an earlier section which deals with foothills and mountains. There were few data presented at the public hearings with respect to the economics of mining coking coal. It was generally suggested by most mining company submissions that export market prospects were not as lucrative as the public supposed. In addition, most companies had experienced physical difficulties in operating surface mines.

It has been indicated several times in preceding sections that pre-planning must be applied in all phases of surface mining activities in the foothills and mountains, in order to minimize environmental problems. Of no less importance to the Province is the early assessment of economic benefits and costs associated with development of the coking coal mining industry. All costs, including those associated with reclamation, are important in assessing the net economic benefit to Alberta. It is of importance to ensure that environmental costs are exported, if the product is exported, and are not borne by Albertans or other Canadians as hidden costs, in the form of concessions or the depreciation of other resources.

### Recommendations Concerning Mining of Bituminous Coals

- (1) The Foothills Resource Allocation Study, now underway should be completed as soon as possible. With that study as a base, comparisons should be made of the economic values of the coking coal resource and the other resources of the foothills and mountains.
- (2) When a resources inventory and economic analysis is available, benefit/cost analysis should be used to make comparisons between alternative uses of foothills and mountain resources.
- (3) The planning of future surface mining activities in foothills and mountains clearly require integration into a comprehensive land management program, in order to achieve maximum social and economic benefits from exploitation of bituminous coal deposits.

- (4) Because surface mining will be able to achieve the extraction of only a small proportion of the total coal deposits of the foothills and mountains, underground and other mining technologies should be reviewed and be kept updated, in order to provide alternative coal extraction methods.

#### 2.2.8.3 Social Effects of Reclamation

In a general way the introduction of sound environmental management practices into resource industries increases the number of jobs the industry offers at the resource development level. This is important in a province that relies heavily on resource industries, particularly if the bulk of the resource production is exported. The net result is the retention of a greater portion of the resource dollar within the province, since the increase in jobs is retained in the province whereas the cost of them is exported in the price of the commodity.

A balancing factor could arise if environmental protection measures were so severe as to close down an industry or if the costs of environmental management were so high as to price the product out of markets. An effect of this sort is more likely in an old established operation than in a new one and in that case might have undesirable effects on the economic stability of existing communities. The gains and losses in employment from these related causes can sometimes be foreseen, and must clearly be taken into consideration when it is possible to do so.

Another problem that can arise is the scale at which work must be done to satisfy the requirements of environmental management. If these are so onerous as to limit the opportunity for developing a resource industry only to companies and corporations that have immense financial resources, then a specific social result comes about. In essence a small operator, and perhaps even medium sized operators are denied entrance into a field that would otherwise be open for their enterprise and initiative. Moreover the field is left then to the exclusive exploitation of very large companies, often based outside the country. It is important that unfortunate social consequences of this sort be avoided.

### Recommendations on Social Effects of Reclamation

- (1) Steps should be taken to ensure that Albertans and other Canadians can take full advantage of the opportunities for additional employment and enterprises that may be provided by environmental management.
- (2) Opportunities for new employment for Albertans should be maximized by ensuring that environmental management technology is fully applied in all phases of surface mining and reclamation.
- (3) Adequate opportunity should be provided through regulations or other devices for new, local companies and smaller operators to continue to have access to the coal resource.

### 2.2.9 Legislation, Regulation, Enforcement and Public Hearings

#### 2.2.9.1 Legislation

Many of the recommendations contained in previous sections may be applied directly in legislation. Nevertheless, there are several broad areas concerning new enactments and application of regulations which should be emphasized. Responsibilities for various environmental aspects of coal mining activities may be found presently in several acts or sets of regulations, depending on the location or effect of the operation or the interests of the government agency involved. Federal, Provincial, Municipal or Regional jurisdictions may be involved, either singly or jointly.

Effects of mining activities may be local, regional, provincial or interprovincial in the nature of their environmental effects and interprovincial, national or international in economic impact. The foothills and mountain coal deposits are of particular significance to Federal-

Provincial policies with respect to National Parks and recreational and industrial developments on the east slopes of the Rocky Mountains and foothills.

Recommendations for Enactment of New Legislation

- (1) Legislation should provide for the definition of roles and implementation of inter-jurisdictional concerns and responsibilities.
- (2) Because of inter-Provincial and Federal-Provincial jurisdictional overlaps, the legislation should empower the Minister to enter into agreements for the establishment of Federal-Provincial and interprovincial committees and task forces, which could advise on interjurisdictional problems.
- (3) Legislation should be broadly based and should stress integrated planning and preventive measures, in order to relieve environmental impacts, rather than post-mining remedial measures as an attempt to repair environmental damage.
- (4) Authority should be provided in reclamation legislation for establishment of two coal mining zones, with the plains as one zone and the foothills and mountains as the other.
- (5) Boundaries of the two mining zones should be determined initially on the basis of type of coal, pitch of seam and altitude of site.

2.2.9.2 Regulations

It has been stressed previously, and is again emphasized, that very large differences exist in prairie, foothill and mountain surface mining. The objectives of any regulations are involved with protection of the public interest combined with a minimum of interference with industry and minimum necessity for on-site supervision. Regulations of necessity must therefore be strong, clear and as simple as possible, capable of ease of enforcement, without the necessity of complicated interpretation by enforcement officers and companies alike.

Because of widely differing conditions throughout the Province, regulations must be realistic in order to be workable. Each mine will have problems unique to that site, as is the case with forest sites where saw timber or pulpwood is being harvested. Regulations for surface mining should maintain the objective of ensuring a productive surface in perpetuity.

#### Recommendations Concerning Regulations

- (1) Recognition in regulations should be made of the location within a zone of a surface mine site, with respect to its sensitivity and human and ecological impacts, related to latitude, altitude, temperature and precipitation regimes, slope, drainage patterns and vegetal cover.
- (2) Regulations generally should place their emphasis not on the authority to exclude an operation potentially harmful to the environment, but rather on criteria which will prevent environmental damage.
- (3) Notwithstanding the general statement immediately preceding, the Minister should be provided the authority in regulations to terminate any activity which is environmentally harmful.
- (4) The Minister should be provided authority in regulations to reserve any site against surface disturbance because of the sensitivity factors discussed in Section 6.3.2, dealing with foothills and mountains.

#### 2.2.9.3 Enforcement

Legislation provides the legal basis for constructing regulations, which in turn provides avenues by which legislative intent is implemented. To be effective, regulations must be enforced strongly, with fairness and common sense. Enforcement of regulations must implement, in the most practical way, the intent of legislators. Enforcement of regulations is enhanced by the quality of the regulations, as well as by the knowledge and ability of enforcement officers to apply regulations to any given situation.



### Recommendations Concerning Enforcement

- (1) Coordination of responsibilities of the various Government agencies for control of surface disturbances should continue to reside in the Department of the Environment.
- (2) Reclamation and other inspectors should be employed as needed to supervise each step in a surface mining development.
- (3) Reclamation inspectors should be trained at an adequate technical level, in order to evaluate and supervise multiple resource use problems associated with surface mining.
- (4) In the case of Crown Lands, the inspectors should be empowered to involve field staffs, such as District Agriculturists from the Department of Agriculture, Regional Biologists or Foresters from the Department of Lands and Forests, Regional Engineers from the Water Resources Division of the Department of Environment, etc.
- (5) Where private lands are involved, it is recommended that in addition to Government personnel, regulations specify that plans be approved by the landowner, who should be involved with the mining and reclamation plan and inspector from the initial stages of application for a mining permit.
- (6) Inspectors should have authority under the regulations for on-site inspection at all times, plus the full authority on behalf of the Minister to suspend an operation for non-compliance with regulations.
- (7) Finally, it is recommended that the Minister have the overriding authority for enforcement decisions respecting reclamation of disturbed areas, and decisions on major resource developments which relate to the public benefit in relation to environmental impact.

#### 2.2.9.4 Public Hearings

A strong public demand is evident for a share in resource policy formulation, particularly where competition occurs for use of land which has several potentials. Public hearings make available as much information as possible to the public, as well as providing a vehicle through



which the public can express its wishes to its government. In the present case, all segments of the public, from concerned preservationist to industrial developer, expressed the view that the public hearing is a valuable mechanism to facilitate the exchange of information between opposing parties. All submissions indicated that the public hearings reinforced the principle of public accessibility to Government, and that continuing public debate on allocation of resources through public hearings was desirable.

#### Recommendations Concerning Public Hearings

- (1) Public hearings are recommended under certain conditions, when new surface mining operations are proposed.
- (2) A requirement for a public hearing should be mandatory on the Environment Conservation Authority at the request of the Minister, or permissive upon public petition to the Minister or to the Authority.
- (3) It is recommended that an environmental impact statement should be filed with the Authority, as well as with the Government department or agency authorized to grant permission to proceed with development of a surface mine.
- (4) The Authority should be required to publish environmental impact statements, as notice to the public of the intention of Government to consider development of a surface mine.
- (5) Publication of the environmental impact statement should specify the conditions under which a public hearing might be held.
- (6) If a request from the Minister, or objection or petition from the public has been received, the publication by the Authority of the impact statement should include a statement that a public hearing will be held.
- (7) It is recommended that the stop order procedure be used to halt an operation, if an operator cannot or will not agree to operate as the regulations require.
- (8) It is recommended that the Authority report its findings from a hearing and make its recommendations to the Minister of the Environment.

## 2.3 THE CONSERVATION OF HISTORICAL AND ARCHAEOLOGICAL RESOURCES IN ALBERTA

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The public view on conservation of archaeological and historical resources encompasses a wide variety of interests. Both in the material presented at the hearings and in the public opinion poll which followed, individuals expressed the general view that emphasis should be placed on all aspects of the conservation of archaeological and historical resources. Aside from this consensus, however, it appeared that the inclination to identify with one aspect or another of archaeology and history was determined to a considerable degree by the proximity of resources to the individual, plus familiarity with the state of preservation or otherwise of the resources in question.

Three successive levels were recognized through which historical material passes, as it is re-incorporated into society. These are:

- (1) the preservation of historical and archaeological objects;
- (2) the interpretation from them of man's life in the past;
- (3) the presentation of history to living people.

The recommendations presented herein reflect the inputs received from individuals and organizations at the public hearings, as well as the comprehensive analyses presented in the Report and Position Paper, prepared at the request of the Authority by the Public Advisory Committee on the Conservation of Historical and Archaeological Resources.

The recommendations of the Authority relate to four main objectives:

- (1) to provide a legislative and administrative framework, through which action can be taken to prevent destruction of or damage to archaeological and historical resources, and to enhance public recognition of their importance;
- (2) to inventory and catalogue historical and archaeological resources in an organized fashion and provide for their preservation;
- (3) to develop means by which the story of the past can be discovered from its relics;
- (4) to provide mechanisms for presenting the past to present generations.

2.3.1 Legislation and Regulations for the  
Conservation of Historical and  
Archaeological Resources

2.3.1.1 Legislation and Regulations

Alberta is one of the few areas of the western world without legislation specifically designed to protect the resources which provide tangible evidence of its heritage. Responsibilities for the protection, display and use of historical and archaeological resources may be intimately associated with ownership of the resources, whether they occur on Federal, Provincial, Municipal or Private lands. Legislation should embody the principle that the history of man is world-wide. Local, regional, national or international interests all have relevance, but should not impede the enactment of legislation acceptable to the public and capable of protecting the Canadian and Albertan heritage.

An Act has been drafted and submitted to the Authority by the Public Advisory Committee on Archaeological and Historical Resources.

A review of the proposed Act reveals that its intent appears in the main to be not inconsistent with the bulk of the submissions made at the public hearings, or the responses to the questions asked in the public opinion survey. Nevertheless, the Authority emphasizes that several sections of the proposed Bill could affect industrial operations, construction projects by Crown agencies or their contractors (impoundments, roads, etc.), or a wide variety of individual activities, including farming operations. For this reason, the Authority suggests that although the principles exposed by the proposed Act may be supported without serious reservation, close scrutiny of the proposed Act will be required by a number of Government agencies, industries, public and industrial organizations and individuals, in order to resolve specific difficulties which may arise.

The proposed Act is therefore submitted with such reservations as are noted in this report.

## Recommendations

- (1) An Act is required which can provide authority for the protection of archaeological and historical resources in Alberta.
- (2) The Act should require the establishment of programs to preserve and make proper uses of historical and archaeological resources.
- (3) Regulations should be drawn up under the Act which prescribe the collection and disposition of historical and archaeological items.
- (4) Regulations should control the removal from the Province of objects of historical or archaeological interest found in and related to the heritage of Alberta.
- (5) Enforcement through suitable penalties should be provided in the Act to prevent wilful destruction or commercial or other vandalism of sites, objects or other entities related to archaeological and historical resources.
- (6) All peace officers under the control of any jurisdiction should have the authority to enforce the regulations.

### 2.3.2 Administration

A review of Alberta programs indicates a fragmented approach to the conservation of historical and archaeological resources. Provision is made in the Alberta Provincial Parks Act (Sections 7, 8 and 9) for declaring a site or object to be of historical or archaeological importance, for exploration of certain park areas and for setting regulations pertaining to historical and archaeological resources. In the Public Lands Act (Section 20(1)2), provision is made for Ministerial authority for exploration for fossils, artifacts etc. as in the Parks Act. The Alberta Heritage Act sets up the Provincial Museum and Archives of Alberta and provides for acquisition and display of materials and objects, as well as other matters pertaining to museums. Other acts that include related material are:

- 1) The Geographical Names Act
- 2) The Glenbow Alberta Institute Act
- 3) The Public Documents Act

#### 4) The Alberta Art Foundation Act.

This Act also provides an Historic Sites Program and an Historic Sites Advisory Committee. Several private organizations in the Province of Alberta contribute significantly to the field of historical and archaeological conservation. These organizations warrant support from Government, both at the Federal and Provincial levels, and mechanisms are required to ensure their continuing involvement. The various advisory boards and management of private institutions should have an effective relationship to the administrative branch of Government which will be responsible for programs involving conservation of historical and archaeological resources.

Alberta has one of the smallest fiscal commitments to historical sites development of all the ten Canadian Provinces. Yet Alberta is rich in a wide and important variety of historical matters, including early travel routes and stopping places, sites of forts, documents and papers as well as artifacts and similar entities. A program of wide scope is required, adequately financed and coordinated with that of the Government of Canada, otherwise the priceless Provincial heritage could pass into oblivion.

The effective administration of programs concerning the conservation of archaeological resources requires that a well organized and adequately staffed agency be established. Such an agency will require close liaison with the public and amateur and professional historians and archaeologists. Long range programs should be established as soon as possible and the support of the public solicited to ensure their success.

#### Recommendations

- (1) A separate Division or Branch should be set up within the Department of Culture, Youth and Recreation to administer an Alberta Historical and Archaeological Survey, which would have the responsibility to initiate and maintain a comprehensive program toward conservation of historical and archaeological resources.
- (2) Provision should be made in the Regulations for the granting of funds to any person or organization considered by the Minister to merit financial support for the conservation, investigation, protection, salvage, purchase or

display of historical or archaeological objects of significance to the Province of Alberta.

- (3) An Advisory Committee on Historical and Archaeological Resources should be appointed by the Minister, and should be composed of regional representatives. A majority of the members of the Advisory Committee should be persons not employed in the Public Service of Alberta.
- (4) The administrative and operational agencies established under the Act should develop programs necessary for inventory, salvage, classification and use of the historical and archaeological resources of Alberta.
- (5) Within the administrative and operational framework of the agency established for the conservation of historical and archaeological resources, training programs should be provided for amateur archaeologists and historians, both within the Department of Culture, Youth and Recreation, and in cooperation with other Government agencies and private institutions, including Provincial or local archaeological and historical societies.
- (6) Programs of the Alberta Historical and Archaeological Survey should be operated wherever possible, in the closest of cooperation with private institutions, organizations and individuals.

### 2.3.3 The Heritage Trust

Aside from the normal funding that is required to operate an Alberta Historical and Archaeological Survey an "Alberta Heritage Trust" should be established to receive gifts of funds, property or other assets, and from which funds could be disbursed under regulation, to support activities concerned with the conservation of historical and archaeological resources.

The Alberta Heritage Trust should take cognizance of and work in close association with the recently announced "Heritage Canada" to promote its objectives as a charitable, educational and non-profit corporation.



Its affairs should be under the general direction of a board of trustees, who should maintain close liaison with Heritage Canada, perhaps through joint membership.

#### Recommendations

- (1) An "Alberta Heritage Trust" should be established which could receive gifts of funds, property or other assets, and from which funds could be withdrawn under regulation to support activities concerned with the conservation of historical and archaeological resources.
- (2) The Alberta Heritage Trust should be financed initially by a capital grant from the Provincial Government of \$5,000,000 to be used as an endowment fund.

#### 2.3.4 The Preservation of Historical and Archaeological Sites and Objects

The hearings had established three successive levels through which historical material passes, as it is re-incorporated into society. These are: (1) the preservation of historical and archaeological objects; (2) the interpretation from them of man's life in the past; (3) the presentation of history to living people. Protective legislation deals more directly with the first of these stages. Since physical objects are involved the first stage is somewhat easier to think about and structure. Nevertheless, the preservation of historical and archaeological objects presents its own pattern of problems. These bear on the nature of any protective legislation that might be passed. Consideration is given to the criteria for the preservation of sites and objects, the custody of archaeological and historical resources, demolition and reconstruction and public involvement.

##### 2.3.4.1 Criteria for the Preservation of Sites and Objects

No consensus appears to exist as to the ready identification of historical and archaeological resources of Alberta but the Authority wishes

to commend the "Guidelines for Historic Sites Program" prepared by the Historic Sites Advisory Committee, which is attached in Appendix II. The attitudes of individuals seem largely to reflect personal association with the resource. There appears to be a general requirement for flexibility and imaginative approaches in defining any set of workable criteria. Furthermore, history is being created constantly as the present slides into the past. An historical document, a feature, a building or an archaeological object can only gain importance by common recognition, often determined by unpredictable happenings. Specific criteria are needed and the guidelines of the Committee are supported.

#### Recommendations

- (1) Archaeological remains such as camp sites, caves, tipi rings, buffalo jumps, weapons, pictographs, etc., which reflect the prehistory and human occupation of Alberta are in need of protection and should be preserved through any feasible means.
- (2) Historical features which recapitulate the social development of Alberta require preservation and protection. They may include hills, trails, waterways, documents, pictures, letters, newspapers, buildings etc.
- (3) Ecological, botanical, zoological and palaeontological entities may have had significant connections with the history and archaeology of Alberta, and are worthy of protection and preservation in a manner similar to that required for historical and archaeological objects and resources.

#### 2.3.4.2 Custody of Archaeological and Historical Resources

From the public hearings and from a public opinion poll a strong consensus emerged that the government should assume responsibility as ultimate custodian of historical and archaeological resources. Nevertheless, the concern that exists is not reflected in unanimity of approach to mechanisms which can achieve the desired protective custody. Ownership questions are

fraught with legal and practical difficulties, which could be reflected in difficulties of constructing legislation and implementing programs which are acceptable and workable.

#### Recommendations'

- (1) Ultimate custody of historical and archaeological resources should be vested in the Crown, but provision should be made for the temporary possession in trust of such resources by private individuals and institutions.
- (2) A simple system should be established in Government for receiving reports of the discovery of Archaeological and Historical objects.
- (3) Discovery of historical and archaeological resources should be recognized in a manner which provides an incentive for the discoverer to report the find to the appropriate Government agency.
- (4) When exploration for historical and archaeological resources is undertaken, it should be done in a carefully organized way and professional help and guidance should be offered to groups and individuals to attain this end.

#### 2.3.4.3 Demolition and Reconstruction

An object or a site may be declared to have historical value through the application of the appropriate criteria. Such a site may be a building, a mountain, a hillside or a plain with archaeological or historical significance. If it is to be demolished so that new construction can take place, the agency whether government or private, promoting the new development should be required to give evidence that what is planned is of greater value than what is being destroyed.

#### Recommendations

- (1) When a development is proposed that would disturb an historical or archaeological site an

impact statement dealing with the repairment of historical and archaeological values should be submitted to the Minister.

- (2) The Government now has powers to issue "Stop Orders" to protect the environment. It is recommended that arrangements be made to allow these powers to be invoked to protect historical and archaeological resources where necessary.

#### 2.3.4.4 Public Involvement

The importance of public involvement cannot be overemphasized, in the successful implementation of a Provincial program for the conservation of historical and archaeological resources. Public identification with Alberta's heritage offers the most suitable method of ensuring that priceless historical and archaeological assets not be destroyed. Support for conservation of historical and archaeological resources can only be engendered by the people becoming knowledgeable about their heritage. When the knowledge is made available to them, people will respond in a fashion which will ensure sufficient support for Province-wide programs in conservation of historical and archaeological resources.

#### Recommendations

- (1) The amateur historian or archaeologist requires support and recognition (a) Through educational programs offered at suitable institutions leading to certification and recognition of amateur archaeologists and historians. The good offices of the appropriate provincial society could be sought in this endeavour. (b) Programs to aid individuals who may devote time and money to preserve Alberta's heritage, but who may require some help to be successful in their efforts should be initiated on a continuing basis probably through the provincial societies.
- (2) Co-ordination of programs through a Provincial Historical and Archaeological Survey is required, in order to ensure administrative support for all projects, and to prevent duplication or overlap.
- (3) The sale or movement of historical and archaeological objects and other artifacts of Alberta should only be permitted under regulation and in particular circumstances.

- (4) The Government agency responsible for programs involving conservation of archaeological and historical resources should develop liaison with the construction industry, in order that effective means be developed by which resources discovered during construction projects can be properly investigated, catalogued and given protection as required.

#### 2.3.5 The Interpretation of the Past

Any man looking at an arrow, or a fading photograph of miners around a pit head can let his imagination move and have pleasure in it. To usefully reconstruct the story of the past from the objects that have been left behind, to weave this into a text, or novel, or film that is given credence by others is a more demanding task. Even to arrange a physical representation of the past requires high training and skill. People with these aptitudes and skills are a part of every population. The task they perform is essential to the introduction of history into the contemporary scene. The problem is whether sufficient opportunity for training, for working, for publication and for access to basic materials is provided in Alberta, or if sufficient advantage is taken of what opportunities exist. A short list of archaeological and historical titles relating to the West is given in Part 8. Bibliography I.

##### 2.3.5.1 Support for Professionals

Investigation of archaeological and historical resources often requires a very long time before the site, object or other entity gains full exposure to the investigator. Preparation of material after initial discovery, may involve consultation of teams of professionals, each of whom may contribute a specialized knowledge. Often, too, "digs" of significance may take several years to complete as they may need research into historical documents, restoration of buildings, or cataloguing of artifacts. Long-range planning of activities up to several years in advance may be required. The ultimate success of many investigative projects concerning historical and archaeological resources depends on continuity of support in both the temporal and fiscal sense.

### Recommendations

- (1) The professional archaeologist or historian requires support for programs of teaching, field work and the like, beyond what often appears at present to be only a year to year commitment of funds from a variety of support agencies.
- (2) The interpretation of the past in our region by historians, archaeologists, film makers, historical novelists, etc. should be supported as a recognized and paid job in its own right, just as are teaching, scientific research, and other services in the public benefit. Regular provision on a suitable scale should be made for it in the Universities, in the public school system and in Government departments.
- (3) The use of historical and archaeological resources *in situ* should be encouraged, since this enhances the impact on the viewer.

#### 2.3.5.2 Support of Local Museums and Historical Centers

Local museums and historical centers exist in a number of places in Alberta, outside of the major population centers. In general, these centers were started through the efforts of an individual, a small group or a local society. Regardless of their specific origins it is probable that they were made operational only through great effort on the part of a few dedicated people, who recognized the value of history to the local community.

The operation of local historical centers and museums has in large part been characterized by continuing financial difficulties. Yet most smaller centers point with pride to their museums and historical centers, and properly consider it a tragedy if one of them ceases to function. Continued operation of local museums and historical centers may well depend on formal recognition of their contributions to our society.

### Recommendations

- (1) While there are excellent facilities in the major cities there is a requirement for the expansion of



historical and archaeological displays in other cities and towns in Alberta.

- (2) Although attention should be paid to requirements in the major population centers, people in the more remote communities should be afforded the opportunity of viewing displays of history and archaeology, through high quality travelling exhibitions.
- (3) In the smaller centers, museum presentations of history and archaeology should attempt to relate to their own immediate area.
- (4) Objects or entities of very great significance should be displayed in larger centers for maximum accessibility and impact on the public.
- (5) Public utilization of historical and archaeological resources should be a recognized priority. The fact of discovery and need for research on historical and archaeological resources are recognized but should not prevent their ultimate availability to the people of Alberta.

#### 2.3.5.3 Public Involvement

The broad sweep of the history of the province is made up of many special components that can best be identified and preserved through the cooperation of special sectors in the population. The fascinating story brought out by new world archaeology is enlivened through the participation of the Indian Nations and the Metis who give human continuity to this historical drama. The more recent pageantry of man's movements about the world is caught up and given identification and colour by what are sometimes called the ethnic populations in the Province. The participation of these special groups to preserve, interpret and present special aspects of our history is vital to its proper development. The Ukranian Village, Heritage Park and Rutherford House are excellent examples of community action to preserve a valuable historical heritage.

## Recommendations

- (1) Advantage should be taken of the unique historical contributions that special groups and individuals can make.
- (2) The recollections of early settlers are still available. An oral tradition in the Indian nations and among the Metis still survives. Ethnic groups and religious communities also carry stories of their own. These should be taped, gathered and made available as source materials.

### 2.3.5.4 Indian Cultural and Historical Centres

History shows that the Plains Indians in Canada had one of the most colorful histories in North America. On the Plains were the Blackfoot, the Bloods, and the Pegans all of whom spoke the same language and shared the same customs. Allied to them were the Sarcee Indians who spoke a different tongue, but who were also part of the Blackfoot Confederacy. Another tribe on the borderline of the Plains, in the Foothills area, were the Swampy Ground Assiniboines, more simply known as the Stonies who allied themselves with the Blackfoot Confederacy when Treaty No. 7 was signed in 1877. Today these tribes populate the southern region of Alberta. The Calgary Native Development Society, acting on behalf of the Indian people of Southern Alberta, have proposed that an Indian Cultural and Historical Centre be established in Alberta. This proposal appears in full in the Proceedings of the Public Hearings.

The Authority is of the view that great importance should be attached to telling the story of the long occupation of the Western Plains in all its color and grandeur, and that advantage would accrue to all of the population of the Province if this were done with the support and the full cooperation of the Indian people whose ancestral occupation so far outdistances those of any others in the West. The history of the Indian people is now a part of the history of all of us. There is no way it can better be brought into the present than through the cooperation of these

early Canadians. Their support and their advice is needed in the preparation and in the presentation of these great stories, so that they may reappear once more among present and future generations.

### Recommendations

- (1) All suitable methods should be sought to achieve the cooperation of the Indian and Metis peoples in the preparation and presentation of the long history of the Indian and Metis peoples of the Western Plains including their present occupation of these areas.
- (2) The project proposed by the Calgary Native Development Society for an Indian Cultural and Historical Centre should be supported in such ways as are appropriate and suitable to the objectives of the Indian people of Southern Alberta. Similar projects for the Indian peoples from other parts of Alberta also can be supported in suitable ways if they are thought to be desirable by the Indian peoples resident therein.

#### 2.3.6 The Presentation of History to the People

It is unreasonable to assume that the history of man can be fragmented into the separate and isolated histories of tribes or regions and still retain the full story of man's development. It is not unreasonable to recognize the responsibility of each region and of each nation to be the custodian of its own history and the teller of its own tales. There is a general feeling in Alberta and indeed in Canada as a whole, which the Authority shares, that we have not yet assumed this responsibility fully. In addition, as Canadian history developed it was perhaps natural to place greater emphasis on the older East than on the younger West.

The system by which history is made has its own structure and dynamics. The records must be collected. The interpretations must be made. Then the story must be made available to and be used by people. The system does not establish itself. Indeed, a typical problem for any new nation is to escape from the systems that other nations have used to produce their histories in which the new nation might have played a small and secondary part, and to set up its own system so that the record of the new group and the new nation can

be made known.

Many individuals, groups and organizations in Alberta and in Canada over the years worked very hard and in many cases made excellent contributions to the process of creating a Canadian and a Western Canadian history. Quite insufficient recognition has been given to these efforts, and quite insufficient acknowledgment has been made of the high quality that much of this work has shown.

There can be little doubt, however, that the system within which these individuals and groups attempted to make their contributions to the production of a Canadian or a Western history was inimical to their efforts. They had to swim upstream all the way. It is true that many advances and improvements have come about in respect of Canadian history, particularly in connection with the Centennial of the Nation. The excellent series of biographies of the Canadian Prime Ministers, fine stories on Canadian rivers, and numerous examples of excellent material full of interest and color, giving the character of the Canadian experience, have been produced and well received, particularly in the last decade.

The system for making a Canadian history and for making a history of Western Canada is perhaps slowly emerging and setting itself up even though the old systems still in large part remain, in which only the histories of other countries and other civilizations were presented to us and in which our own role was obscure and hard to determine.

The Authority interprets the intent of the hearings and of the public opinion poll to be a clear statement that this is no longer good enough. It is time now that we establish, as any responsible society must, an adequate system for developing and telling our own story. This is, of course, not to be done in isolation and without full reference to the broad history of man. The time has nevertheless come for us to assume our responsibilities for keeping alive the history of ourselves.

#### 2.3.6.1 The Schools and Universities

Full credit and encouragement must be given to those efforts within the school system at the secondary and at the post-secondary levels that are now bringing about the introduction of Canadian studies, of Canadian history, of new world archaeology with an emphasis on our own regions, of ethnic studies

related to the West, and of the still quite timid introduction of Canadian literature or of Western writing into course programs. However, the obstacles that have been put before those individuals who have been striving hard to attain reasonable objectives are still dominant. It is still much easier for young Albertans and young Canadians to learn the history of other countries, to read the literature of other people, to become aware of the problems of other nations, to know what has happened before in distant lands, than it is for them to find out what has happened, twenty, a hundred, or a thousand, ten thousand or twenty thousand years ago in their own province and in their own nation. Indeed, no specific statement of responsibility for developing an awareness of Canadian or of Albertan history seems to be contained within the curriculum objectives of the public school system or of the post-secondary school system.

Canadian universities now claim to be placing a steadily increasing emphasis on courses with a Canadian content. Canadian content has increased from what was almost a negligible amount four or five years ago to marginal as recently as two years ago, and is now becoming a more substantial item in the curriculum of some of the universities. A commission sponsored by the Association of Universities and Colleges of Canada and financed by a \$100,000 grant from the Canada Council has been set up to study, report and make recommendations on the state of teaching and research relating to Canada in Canadian universities. As far as Alberta is concerned, the results of our public enquiry indicate that these steps would be strongly encouraged, and that indeed they are coming well behind public demand rather than leading it.

### Recommendations

- (1) Curricula in the public school system in Alberta should make proper provision for the teaching of Canadian history with due emphasis to be given to the history of the West and of Alberta. Without distorting or otherwise impinging upon the general objectives of curriculum planning, it is recommended that a sufficient emphasis be placed upon the short and long term past of Alberta, of Western Canada and of Canada so as to enable our young people to understand their place in the world.

- (2) Post-secondary institutions including the universities should develop their resources in New World archaeology, in Canadian history including the history of the West, and of Alberta, as well as Canadian and Western literature and other manifestations of its culture and diversity, and incorporate programs and courses that students can take for credit in appropriate academic programs.
- (3) Additional opportunities should be made available through continuing education departments in all suitable institutions for adult programs in the history and archaeology of Canada, Western Canada and Alberta.
- (4) An enquiry should be commissioned to report and make recommendations as to the state of Canadian studies as a whole and with special reference to Western Canada and Alberta. Terms of reference would include but need not be confined to:
  - a) an inventory of the extent of Alberta history and archaeology present in school texts used in the Alberta school system.
  - b) A review of school curricula in all grades to determine the emphasis placed on Alberta history and archaeology in the teaching program.
  - c) recommendations as to policy the Government of Alberta might establish through the Department of Education as to the role and priority to be given the history and archaeology of Canada, of Western Canada and of Alberta in the school curricula.
  - d) the availability of teacher training programs in Canadian and Western Canadian History and Archaeology, so that teachers can become qualified to fulfill related teaching programs in the public school system.
  - e) the feasibility of using educational aids like the graphic arts, animated cartoons, films of archaeological digs, tours to historical sites and similar devices to facilitate the teaching of history and archaeology in the public schools.

#### 2.3.6.2 Displays in Museums

The Province is fortunate in having excellent museums in both Edmonton



and Calgary. As well travelling displays have been sent out both under private and under government sponsorship to the towns and villages in the Province giving them some access to the experiences that museums can provide. Continued support for museums in the Province is expected but the Authority particularly wishes to commend the efforts that have gone into the travelling caravans that have visited the towns and the smaller centers of population.

#### Recommendations

- (1) Travelling caravans should be encouraged through both public and private support to present the history and archaeology of Canada, Western Canada and Alberta to people outside the major cities.

#### 2.3.6.3 Public, University and School Libraries

Libraries very often are organized under systems in which Canadian literature and Canadian history and similar material are given a minor classification. Furthermore, often Canadian collections and material that refers to Canada are so thinly held that it is classified as research material, cannot be taken from the library, and must be read only under surveillance, or is placed under other restrictions. This seems to be undesirable. The situation is even more extreme for Western Canadian or Albertan history and literature.

#### Recommendations

- (1) Primacy of place and ease of access together with a sufficient supply of copies and a good coverage of published material should be provided for Canadian history and Canadian literature in the libraries within the school system, and in the public libraries in the Province.
- (2) Special emphasis should be given, and special efforts taken to make the history and literature of Western Canada and of Alberta easily available to the public in the libraries of the Province.

#### 2.3.6.4 Bookstores and Commercial Outlets

The variety and the high quality of written material dealing with Canadian, Western Canadian and Albertan history and archaeology has been referred to. It is, however, not easy to get. It is not possible to find Canadian sections in some bookstores and only one or two bookstores specialize in Canadiana. A few are associated with efforts to publish and republish Canadian material. However, in most bookstores it is still much easier to buy the histories of other countries written, produced and printed in other countries than it is to buy material that relates to our own country. This is equally true in any other area that bears on the culture of our nation, and of our Province. The system works to flood us with information about other people.

#### Recommendation

- (1) Better methods should be developed for making Canadian, Western Canadian and Albertan history and literature available to the public through commercial outlets, public and institutional libraries, the Queen's Printer, and through the media.

#### 2.3.6.5 The First Hundred Years

The present phase of human occupation in the Province is now reaching the stage at which centennials will begin to be celebrated. The founding of the Royal Canadian Mounted Police in 1874, of Calgary in 1875, the Riel Rebellion in 1885, of Edmonton as a town in 1892 and a city in 1904, the commencement of mass migration into the Province beginning in the late '90's and the founding of the Province itself in 1905 provide a series of significant historical events whose centennials would mark suitable occasions for popular celebrations. These centennials mark off periods of time at which achievements should be commemorated but for this to be done preparations need to be laid well in advance.

Some commemorative projects are already under way. The reconstruction of Fort Edmonton, the creation of Heritage Village in Calgary, the commencement of the assemblage of the Ukrainian Village are excellent and commendable

achievements. Those that are completed are being vastly enjoyed by the public. The remarkable contributions associated with the names of dedicated individuals in Alberta have given the people of the Province a unique advantage in respect of recent historical time as well as of the more distant past. Developments by local historical societies in their attempts to conserve and develop museums of regional interests are excellent examples of how volunteer community groups have addressed themselves to the objective of conserving important elements of the history of the Province of Alberta.

#### Recommendations

- (1) Suitable preparations should be made at appropriate times to celebrate the centennials of important events in the history of the Province.
- (2) Public recognition should be extended to the efforts of communities and groups to conserve, reconstruct, renovate, and in other ways preserve and present the stories of the past to their fellow citizens.
- (3) The possibility should be encouraged for many towns that serve as regional centres to move in similar ways through community efforts to reconstruct or preserve structures that have historical significance, possibly to be used as museums and centres for the display of objects, photographs and other material of historical interest.
- (4) The provision of support should be encouraged for these regional historical centres from governments at both the provincial and federal levels without, however, removing the responsibility and the management of these centres from the community groups.



### **3. REPORTS AND RECOMMENDATIONS OF THE PUBLIC ADVISORY COMMITTEES**

## REPORTS AND RECOMMENDATIONS FROM THE PUBLIC ADVISORY COMMITTEES

The Public Advisory Committees, including the Science Advisory Committee and the Advisory Committee on the Conservation of Historical and Archaeological Resources, have given advice to the Authority both in the form of written reports on tasks they have undertaken and in the form of specific recommendations that have been prepared and passed as resolutions at plenary sessions of the Public Advisory Committees.

### 3.1 RECOMMENDATIONS FROM THE PUBLIC ADVISORY COMMITTEE

The Authority received advice from the Public Advisory Committees throughout the year. There is some structure both in how the advice is developed within the Public Advisory Committees, and in respect of how it is then received, considered and passed on by the Authority. This is the first year in which the Public Advisory Committees have been able to make full use of their advisory system and some comments on it might therefore be of interest.

### 3.2 THE SYSTEM FOR GENERATING ADVICE WITHIN THE PUBLIC ADVISORY COMMITTEES

The Public Advisory Committee on the Environment has established study groups on different aspects of environment conservation such as 1. Renewable Resources, 2. Non-Renewable Resources, 3. Pollution, 4. Environmental Protection. The study groups may name special task forces to look into subjects within their jurisdiction, and have access to resource personnel from the departments of government. The study groups may after such deliberations propose advice to the Authority, which is copied to the Authority but is also sent directly to the Co-Ordinating Committee of the Public Advisory Committee. These recommendations and resolutions are then normally considered and voted upon at the annual conference of the Public Advisory Committee which is organized by the Co-Ordinating Committee. After discussion from the whole member-



ship those recommendations that are endorsed are formally presented to the Authority. The annual conference of the Public Advisory Committee is an open meeting and the discussions and the advice of the Public Advisory Committee are therefore available to the public who may attend, or to the media who can report upon it.

There are also provisions for more immediate action if the study groups or the Public Advisory Committee deem it necessary.

The discussions and proposals of the study groups and of the annual conference are published in the Annual Report of the Public Advisory Committee. This document is published under the auspices of the Authority and is tabled in the Legislative Assembly by the Minister of the Environment, and is given wide public circulation by the Authority.

### 3.3 THE RESPONSE OF THE AUTHORITY TO ADVICE FROM ITS PUBLIC ADVISORY COMMITTEES

The advice the Authority receives from its Public Advisory Committees may be in response to a request from the Authority for advice on a particular matter, or it may come forward entirely at the initiative and as the result of the studies of the Public Advisory Committees themselves. In either event, the Authority then passes the advice it receives without change informally to the Minister as soon as it is received. It then seeks to have further discussions with the Public Advisory Committees to explore the intent behind the recommendation, and to assess the importance and priority that is attached to each particular recommendation. It does this by meeting with the individual study groups, by participating in the annual conference, and finally by having detailed discussions with the Co-Ordinating Committee and such additional members of the Public Advisory Committee as may be thought appropriate by the Public Advisory Committee after the resolutions have been passed at the annual conference.

The recommendations of the Public Advisory Committee are then included in the Annual Report of the Authority, with such comments as have

arisen out of the discussion the Authority has held with the Public Advisory Committee. The Annual Report is tabled by the Minister within thirty days of the opening of the Spring session of the Legislative Assembly.

### 3.4 RESOLUTIONS PASSED AT THE SECOND ANNUAL CONFERENCE OF THE PUBLIC ADVISORY COMMITTEE ON THE ENVIRONMENT

The following resolutions were passed at the plenary session of the second Annual Conference of the Public Advisory Committee on the Environment on October 21st, 1972. Most resolutions were proposed by a particular study group after deliberations within the study group. In addition, one general resolution was passed.

#### 3.4.1 General Resolutions

3.4.1.1 "The Public Advisory Committee on the Environment expresses its concern that the Minister of the Environment and the Government of Alberta should have restrained the Environment Conservation Authority from fulfilling the purpose of promoting totally free public discussion of environmental issues.

The Public Advisory Committee on the Environment hereby requests the Minister and the Government of Alberta to rescind the recent amendment to Section 7 of the Environment Conservation Act, and to allow the Environment Conservation Authority its former freedom of action in generating public discussion of environmental problems."

#### 3.4.2 Resolutions Proposed by the Non-Renewable Resources Study Group

##### 3.4.2.1

Whereas a major problem in Alberta is the question of

whether to develop and how to develop our non-renewable resources with minimum environmental damage, and the problem is particularly important in mountain areas and in connection with exploration as well as with actual extraction; be it resolved that in those areas where non-renewable resources are to be developed there should be adequate provision for environmental reclamation and enhancement so that the area and region should not suffer damage to renewable resources.

#### 3.4.2.2

Whereas the government, on behalf of persons, corporations, and government departments, is the custodian of our historical resources and must accept responsibility for their preservation; be it resolved that this body supports the proposed Alberta legislation for the preservation of historical and archaeological resources which sets forth the mechanism by which historical and archaeological sites can be preserved or salvaged, and further supports the establishment of an archaeological survey as an essential part of the act.

#### 3.4.2.3

Whereas paleontological and geological formations are part of the resources, of which we all are custodians, that record the total history of the earth; be it resolved that legislation be implemented for the preservation of outstanding geological and paleontological formations.

### 3.4.3 Resolutions Proposed by the Renewable Resources Study Group

#### 3.4.3.1

That prior to the implementation of programs or contracts concerning public lands, the public, or at least appropriate public

advisory committees, be given comprehensive information on the proposed action for review and possible recommendations for amendment. This review should be allowed adequate time.

3.4.3.2

That through the public hearings and the report of the Environment Conservation Authority, the management objectives in the Eastern Rockies foothills region be clearly and realistically defined, before any new plans and agreements concerning the use and conservation of the region are decided upon.

3.4.3.3

That pending water allocation and pollution issues between provinces, such as the case of Peace/MacKenzie system, be resolved by making use of the provisions of the Canada Water Act to set up joint management bodies for the entire system.

3.4.3.4

That statutes be enacted requiring that adequate environmental impact statements be prepared and published in full before any major private or public developments take place, wherever public lands and water, and expenditure of public funds are involved.

3.4.3.5

No final operating ground rules for the Grande Prairie Pulp Mill Forest lease should be approved before the report of the Environment Conservation Authority on the Forest Utilization Hearings can be taken into consideration.

3.4.3.6

Roadside and stubble burning:

- a. Roadside and railroad rights-of-way should never be burned in the spring.
- b. Stubble burning should not be allowed except under special municipal permits. All municipalities in Alberta should pass an appropriate bylaw under the Alberta Soil Conservation Act.
- c. There is need for more public information on stubble burning practices which would hold risk to wildlife and general fire hazards to a minimum.

3.4.4 Resolutions Proposed by the Environmental Protection Study Group

3.4.4.1

Be it resolved that the Public Advisory Committee recommend that all further construction of the Kananaskis Road on a new alignment be delayed until the Environment Conservation Authority's "Eastern Slopes" hearings have been completed and recommendations made public.

3.4.4.2

Be it resolved that a standard design be developed for recreation and tourist roads for the mountain, foothill and prairie regions for incorporation in the highway design manual.

3.4.4.3

The Environmental Protection Study Group wishes to draw to the

attention of the Public Advisory Committee the following resolutions passed at the meeting of September 18, 1972:

- a. That a moratorium be declared on lakeshore development in Alberta and that regional planning commissions be instructed to zone all lakeshores in such a way to preserve substantial areas of wild land. In lakeshore zoning, ample consideration should be given to those urban inhabitants who cannot afford time or money for extensive travel. Additional funds should be provided for research on lakeshore conservation and development.

- b. That the Public Advisory Committee request the Minister of the Environment to publish and release to the public before the end of 1972 the documents entitled:

1. The impact on the environment of surface mining in Alberta - Report and Recommendations, December 1971 - January 1972.
2. Public hearings on a proposal to restore water levels in Cooking and Hastings Lakes - Report and Recommendations, August, 1971.

#### 3.4.4.4

That the Environmental Protection Study Group wishes to draw to the attention of the Public Advisory Committee deficiencies in the "Off-Highways Vehicle Act" and make the following recommendations for the improvement approved by the Study Group on September 18, 1972:

- a. Off-highways vehicles must be licensed annually so they are clearly identifiable.



- b. Drivers of off-highways vehicles must be registered, with a minimum age of 14.
- c. There must be realistic minimum and maximum fines.
- d. All drivers must have third party insurance.
- e. All off-highways vehicles must meet noise and pollution standards.
- f. Research must be promoted to provide information on the effects of off-highways vehicles on wildlife and vegetation.
- g. Areas of use must be drawn up.

#### 3.4.4.5

Whereas there is no adequate definition or policy statement differentiating the role and purpose of the following: natural areas, IBP (International Biological Program) - CT areas, ecological reserves, wilderness areas, primitive recreation areas, provincial parks, federal bird sanctuaries; a full review of parks and natural areas preservation and recreation policy should be undertaken so as to provide explicit definitions and statements of purpose concerning the roles to be played by each type of area. In addition, an inventory of all such areas should be compiled.

#### 3.4.5 Resolutions Proposed by the Pollution Study Group

##### 3.4.5.1

Whereas it is recognized that the automobile is a major cause of air pollution, especially under cold weather, temperature inversion conditions, be it resolved that the provincial and federal governments be urged to minimize pollution from this source by requiring:

- a. That emission controls on new automobiles be required to work efficiently down to -40°F.

- b. That it be made illegal to remove such devices.
- c. That an intensive program be undertaken to encourage the people to use public transportation instead of private automobiles.

#### 3.4.5.2

Whereas our national parks are located many miles from our major cities and whereas many of our less privileged citizens of these cities have not sufficient time and/or money to travel to these parks, be it resolved that more emphasis be placed on the development of recreational park areas in close proximity to these centres of population and that ready access by public transportation systems be provided.

#### 3.4.5.3

Whereas the frequency and duration of occurrence of ice fog over northerly cities is considered (a) to be detrimental to health and (b) to be a function of the size, shape and population density (in addition to meteorological factors), be it resolved that additional studies be made to determine:

- a. To what extent the presence of ice fog may cause distress among the people, and
- b. Whether controlling the size, shape or population density of a city could be used as a means of limiting the frequency and duration of occurrence of ice fog.

#### 3.4.5.4

Whereas a problem with respect to the occurrence of ice fog over northerly cities exists during cold months, be it resolved that funds be provided to support research and development towards alleviation of this

problem; and towards (a) devising practical methods and (b) designing equipment for the inexpensive removal of water vapor from flue gases emitted by gas-fired heating units.

#### 3.4.5.5

Whereas the recycling of used non-renewable resources such as, for example, waste lubrication oil is sometimes not economically attractive to the small entrepreneur when strict emission control regulations are applied, be it resolved that market studies be made and the development of the technology and the improvement of reclamation plants be subsidized, if necessary, to assist (a) in making these operations economically attractive and (b) in meeting emission control regulations governing said operations. Examples of non-recoverable resources under this resolution are waste lubricating oil and waste paper.

### 3.5 ACTION ON THE RECOMMENDATIONS

The several recommendations cover a wide variety of subjects. They also stand in different respects as to the actions that have been taken arising from them, or that are intended to be taken by the Public Advisory Committees and the Study Groups. In some cases the Public Advisory Committee wishes to give further consideration to and elaborate upon some of their recommendations. In other cases action has already been taken by government or is under consideration. In still other cases, the resolutions are now incorporated into public hearings that the Environment Conservation Authority has held and has recommendations on before the government, or has been requested to hold by the government.

The response to date to the several recommendations can be indicated by listing the resolutions by number under four separate headings.

### 3.5.1 Resolutions on Which Action has been or is being Taken by the Government

The resolutions on which action has been or is being taken by Government are listed in the following paragraphs of this text:

3.4.1.1, 3.4.2.1, 3.4.2.2, 3.4.2.3, 3.4.3.2, 3.4.3.5, 3.4.4.3-b, 3.4.4.4, 3.4.4.5, 3.4.5.2, 3.4.5.4.

### 3.5.2 Resolutions Under Review in Public Hearings to be Held by the Authority

Resolutions which will be reviewed in public hearings to be held by the Authority are outlined in the following paragraphs of this text:

3.4.3.2, 3.4.3.5, 3.4.4.1.

### 3.5.3 Proposals to be Given Further Study Elaboration and Clarification by the Committees

Some of the resolutions that were referred back to the Committee for further study contained principles in them that were clear and these resolutions may also appear in other categories. Some of the resolutions were not always clear in their intent, though in some cases parts of the resolutions were unambiguous. In some other cases resolutions were quite general and needed to have further elaboration so that their significance would become clearer. In discussions with the Co-Ordinating Committee it was agreed that further consideration would be given to these resolutions. It might be expected that they would then reappear, perhaps with modifications, elaborations or clarifications. The resolutions were: 3.4.3.1, 3.4.3.3, 3.4.3.6, 3.4.4.3, 3.4.5.1.

### 3.5.4 Resolutions for Further Action

Some resolutions had not yet resulted in clear-cut actions but are

clearly significant to the province. The Authority supports further consideration of these recommendations by government and by others who are concerned. In most cases attention and thought is being given to some aspect of these proposals. The resolutions that are referred to are: 3.4.3.4, 3.4.5.1, 3.4.5.2, 3.4.5.3, 3.4.5.4, 3.4.5.5.

### 3.6 REPORTS FROM THE PUBLIC ADVISORY COMMITTEES

#### 3.6.1 The Public Advisory Committee on the Environment

The Annual Report of the Public Advisory Committee on the Environment is published under separate cover and presented to the Minister who tables it in the Legislative Assembly.

#### 3.6.2 The Science Advisory Committee

##### 3.6.2.1 Report of the Science Advisory Committee

The report of the Science Advisory Committee is also published separately. This is its First Annual Report and it includes a report of its general activities, and also contains in its Appendix reports that it prepared for the Authority on subjects like surface reclamation, the Village Lake Louise Project, and the role and functions of a Science Advisory Committee.

##### 3.6.2.2 Constitution and Organization

The Public Advisory Committee on Environmental Sciences, referred to by its members as the Science Advisory Committee (SAC), was officially appointed at a joint meeting held with the Environment Conservation Authority in Calgary on May 11, 1972. The committee had previously been

established unofficially on November 19, 1971. The members are drawn from universities and industries; individuals who are actively engaged in scholarly or scientific research both applied and basic. The term of membership is 3 years, with 1/3 of the membership rotating each year. The steering committee, composed of the chairman and 4 members elected for a one year term, receives proposals from the Environment Conservation Authority and decides if it is a matter for immediate consideration by the Science Advisory Committee as a whole or whether an appropriate ad hoc committee should be struck to examine it more carefully. If the latter action is taken, the ad hoc committee's final report must be approved by the Science Advisory Committee as a whole before it is formally submitted to the Authority.

### 3.6.2.3 Advisory Function of the Committee

It is proposed that the Science Advisory Committee provide the Environment Conservation Authority with scientific advice at four recognized stages in the development of public hearings:

- 1) developing the terms of reference for consultants;
- 2) evaluating the consultant's report, including the data on which the report is based;
- 3) evaluating the input at the public hearings;
- 4) preparing recommendations based upon the scientific aspects of the hearings.

In order to facilitate its advisory role in a number of hearings, the Science Advisory Committee appoints ad hoc committees, each of which concentrates on a specific hearing. The members of these ad hoc committees are either members of the Science Advisory Committee or individuals drawn from outside who are experts in the appropriate disciplines.



#### 3.6.2.4 Participation in Public Hearings

The Science Advisory Committee also participates more directly in public hearings by either 1) preparing position papers or 2) organizing and conducting technical sessions (as a committee of the whole or an ad hoc committee.)

On January 26, 1972 the ad hoc committee's "Recommendations on Surface Reclamation Legislation in Alberta" was submitted to the Authority.

On March 7, 1972 the ad hoc committee on the Lake Louise Hearings submitted its report to the Authority for transmittal to the Cabinet.

The ad hoc committee on the "environmental effects of sulphur extraction gas plants" has completed the first draft of its report. It is anticipated that the final report will be submitted to the Authority in the very near future.

The ad hoc committee on biocides is currently compiling and preparing material for the *in camera* technical sessions of the proposed hearings.

#### 3.6.2.5 The Ad Hoc Committee on Sulphur Extraction Gas Plants

This committee was organized in May, 1972 to advise and assist the Authority with the public hearings on the sulphur extraction gas plant. Initially the committee had hoped to recommend the appointment of the consultant; however, Dr. R. Klemm had already been chosen by the Authority. The committee therefore decided that they would peruse the consultant's report prior to the hearings and comment on it from a scien-

tific point of view. This unfortunately was not done because of insufficient time between the public release of the report and the public hearings.

The committee did subdivide into 3 groups: 1) plant and soil sciences, 2) human and animal hazards and 3) chemistry and chemical engineering. It was their intent to conduct preliminary studies on their own and submit their observations. They also assessed the material presented at the hearings before drafting their final report.

The ad hoc committee on sulphur extraction gas plants has completed the first draft of its report, which essentially consists of commentary on a) the Klemm Report, b) briefs presented at the hearings, c) certain matters studied independently by the ad hoc committee members, and d) matters related to the hearings in general. The final report will be submitted to the Environment Conservation Authority in the near future, and will be included in the "Proceedings of the Public Hearings on the Environmental Effects of Sulphur Extraction Gas Plants" to be published by the Authority.

#### 3.6.2.6 Ad Hoc Committee on Biocides

The Environment Conservation Authority plans to hold public hearings on the Environmental Effects of the Use of Biocides in Alberta. In preparation for these hearings an Ad Hoc Committee of the Science Advisory Committee was struck to organize, conduct and evaluate *in camera* technical sessions on this topic. These technical sessions are scheduled for early April, 1973, and will consider all commercially produced chemicals used in the intended control of undesirable species in Alberta. At the public hearings to follow, citizens will have access to a summary of the data and questions tabled at the technical sessions and will be able to relate this information to their individual submissions.

The Ad Hoc Committee assisted the Authority in developing a terms of reference for the hearings and will be responsible for the detailed organization of the technical sessions. The Authority engaged the services of a consultant on biocides who will document data and information prior to and following the technical sessions under the guidance of the Ad Hoc Committee.

This will be the first public hearing held by the Authority for which technical sessions have been organized. It provides an excellent opportunity for the Science Advisory Committee to bring their professional expertise to bear on a complex problem. It is anticipated that the efforts of the Ad Hoc Committee on Biocides will prove the worth of this approach to public enquiry.

### 3.6.3 The Public Advisory Committee on the Conservation of Historical and Archaeological Resources

The Report of the Public Advisory Committee on the Conservation of Historical and Archaeological Resources had been widely circulated as a background paper in respect of the public hearings on the Conservation of Historical and Archaeological Resources. It is attached as Appendix 3.



#### **4. ADDITIONAL ACTIVITIES OF THE AUTHORITY**

#### 4.1 REPORTS AND STUDIES PROVIDED TO THE MINISTER

In accordance with its legislated functions the Environment Conservation Authority acted in an advisory capacity to the Minister of the Environment on a variety of environmental matters not directly related to scheduled public hearings. This advice was occasioned by requests from the Minister as well as enquiries by the general public. In addition to its own reports the Authority also forwarded to the Minister advice and recommendations from the Public Advisory Committees on matters of local, provincial or national concern.

##### 4.1.1 Public Hearings on Village Lake Louise

In response to a request from the Minister, members of the Authority attended the public hearings on the Village Lake Louise development proposal held by the federal government in Calgary during March, 1972. An assessment was made of the hearings and a report with recommendations thereon was forwarded to the Minister. The Public Advisory Committee on Environmental Sciences also prepared a critical evaluation of the proposal and this was passed on to the Minister for his consideration. In summary the recommendation of the Authority was as follows:

Because of (1) the nature of the public concern, including a wish for a statement from the province; (2) the direct impact of the proposal on developments in the Province such as the tourist industry; (3) the presence of on-going and projected plans by the Province for areas adjacent to the national parks, the Authority suggests that the Government of Alberta request the Government of Canada to delay implementation of the Village Lake Louise Plan until the Canmore Corridor Hearings have been held, and until the Foothills Resource Allocation Study has proceeded to the point where integrated recommendations are possible in the Canmore-Banff-Lake Louise area.

Copies of the documents concerned are included herewith as Appendix 6.



#### 4.1.2 United Nations Conference on the Human Environment

The Minister of the Environment was invited as an official delegate from Canada to the United Nations Conference on the Human Environment held in Stockholm, Sweden in June, 1972. He requested the Authority to prepare background papers on the following two Conference themes:

- (1) Planning and Management of Human Settlements  
for Environmental Quality
- (2) Educational, Informational, Social and Cultural  
Aspects of Environmental Issues

Particular emphasis was given to the second report since the Minister was appointed Chairman of the Canadian Committee on this topic. Both papers considered the topics from an Alberta position and related this to the world scene. Copies of these papers are attached as Appendices 4 and 5.

#### 4.1.3 Alberta Environmental Research Trust

During 1972 the Alberta Environmental Research Trust was established under the jurisdiction of the Minister of the Environment. The Authority was asked to contribute to the development of a priority listing of environmental matters in the Province which require research. In response, five general problem areas were outlined including water management, surface reclamation, toxic industrial gases, use of pesticides and the allocation of land and resources. The Authority also made available suggestions from the Public Advisory Committee on the Environment which included items such as environmental education, utilization of waste materials, economics of mineral extraction and atmospheric pollution in urban areas. Copies of these recommendations are attached as Appendix 7.

#### 4.1.4 Recreational Use of Alberta Lakes

The Authority drew to the attention of the Minister the marked decrease in the number of visitors to particular Provincial Parks in Alberta. Three parks with well-known recreational lakes had a 50% decrease in visitors while the remaining Provincial Parks as well as the National Parks showed an increase. These trends reinforced the public dissatisfaction that had been expressed in some of the Authority's hearings concerning the deteriorating quality of some recreational lakes in the Province. A copy of this communication is attached as Appendix 8.

#### 4.2 ADDITIONAL ACTIVITIES OF THE AUTHORITY

Members and staff of the Authority continued their involvement with a number of on-going programs relating to environmental matters. Through this involvement the Authority is able to coordinate its activities with those of other provincial and national organizations. The following two programs are representative of these activities.

##### 4.2.1 Man and Resources Program

The Man and Resources Program, initially sponsored in 1971 by the Canadian Council of Resource and Environment Ministers, is a nationwide program devoted to the development of public opinions and suggestions concerning the conservation of natural resources and the protection of our environment. The first phase of the Program during 1972 was to formulate the important environmental problems as identified by the general public from all parts of Canada. Each province ran its own public communications activities and in Alberta the Department of the Environment was the coordinating agency.

The Environment Conservation Authority played an active role in the Man and Resources Program in Alberta. The Public Advisory Committee on the Environment has identified major problems over the last two years and their efforts complemented the results of the public meetings held across the Province. Two members of the Public Advisory Committee were among the official Alberta delegation to the National Workshop held in Quebec during early November. At that Workshop over 300 delegates came to a consensus on the major environmental problems in Canada.

The Authority, through its Public Advisory Committee, will continue to play an important role in the Man and Resources Program as it moves into the final phase of developing guidelines for solutions to the problems identified.

#### 4.2.2 Transportation Emergency Assistance Plan

During the year, as a result of initiatives taken by the Authority, a Transportation Emergency Assistance Plan was introduced to the province of Alberta.

Over several months the Authority held meetings with representatives of the chemical and petroleum manufacturing and the trucking industries in the Edmonton area, the railways and the Alberta Emergency Measures Organization. A committee was formed to consider the matter and develop a suitable plan.

Liaison was established with the Canadian Chemical Producers Association and details were obtained of the Association's "TEAP" plan which had operated effectively in Ontario and Quebec for the past two years. With the fullest co-operation from the Chemical Producers Association it was decided to adopt their plan for Alberta.

Since uniformity of transportation emergency procedures coast to coast was considered to be essential the committee extended its contacts to both neighbouring provinces and obtained commitments for uniformity in both cases.

As a result of these activities an announcement was made on October 25th that a regional control centre had been established for the province and was on call twenty-four hours a day seven days a week.

Under this plan it is now possible by calling the control centre to obtain immediate expert technical assistance for emergency forces at an accident scene in order to protect life and property and minimize environmental damage.

## 5. CONSULTANTS

## 5.1 USE OF CONSULTANTS IN PUBLIC HEARINGS

As indicated in the Environment Conservation Act the Authority is at liberty to employ consultants in connection with any enquiry pertaining to environment conservation. During the past year consultants were engaged to develop background information reports on a number of public hearings scheduled by the Authority. These consultant's reports are briefly outlined below.

### 5.1.1 E.P.E.C. Report on Forestry

In connection with a proposed public hearing on the environmental impact of forestry operations in Alberta, the Authority retained the services of E.P.E.C. Consulting Ltd. to develop a broad overview of this topic. The resulting report, "The Forest Resource in Alberta: An Examination with Respect to Conservation, Recreation and the Forest Industry", was a comprehensive document dealing with all aspects of forest land use in the Province. The aesthetic and recreational aspects were dealt with in some detail while forest management and operations received less attention. The report has proved to be of assistance to a number of agencies wishing to obtain a broad understanding of the multiple use of forest land in Alberta.

### 5.1.2 Hanson's Report on Forestry

The Authority engaged Mr. W.R. Hanson as a consultant to prepare a more detailed and critical review of the nature and extent of forestry operations in the Province, with particular emphasis on the effects of these operations on other resources and the environment in general. The resulting report, "The Impact on the Environment of Timber Production and Processing in Alberta", provides a concise overview of the environmental costs and benefits resulting from the production of all types of forest products in the Province. The report will also provide the public with a working knowledge of the various government agencies responsible for the implementation of forest



policy in Alberta as well as the management regulations under which the industry operates.

#### 5.1.3 U.M.A. Report on Pipelines

The Authority is planning to conduct public hearings on the environmental impact of exploration, development and transportation of petroleum products in Alberta. In this regard the consulting firm of Underwood, McLellan and Associates Limited (U.M.A.) was retained to prepare a background report on this topic. The resulting document, titled "A Preliminary Assessment of Environmental Impact of Oil and Gas Exploration and Pipeline Operations in Alberta", reviews the scope of the problem and recommends ways to reduce the potential for environmental degradation resulting from the activities of the industry. Particular attention is given to the regulations applicable to field operations along with suggestions for improving the administrative framework under which the industry is controlled.

#### 5.1.4 Klemm's Report on Sulphur Extraction Gas Plants

During October, 1972, the Authority held public hearings throughout Alberta on The Environmental Effects of the Operation of Sulphur Extraction Gas Plants. In preparation for these hearings Dr. Roger Klemm was temporarily seconded to the Authority from the Research Council of Alberta to prepare written background information relevant to this topic. Over a period of about four months immediately prior to the hearings, Dr. Klemm, with the assistance of staff members from the Authority, prepared a comprehensive report titled "The Environmental Effects of the Operation of Sulphur Extraction Gas Plants". Dr. Klemm was also retained to present and discuss a condensation of his report at each of the public hearings.

The stated purpose of the report was to "outline the present situation in Alberta concerning sulphur extraction gas plants and to describe the technology employed in sulphur extraction". Within this broad context specific topics were discussed in detail. These included

the history and economics of the sour gas processing industry in Alberta; the technical aspects of plant operations; a description of polluting effluents and their effects on animals and plants; a discussion of the regulatory agencies in the Province and the present and proposed government regulations relating to the operation of gas plants.

Dr. Klemm's report received wide circulation during and after the hearings and stimulated discussion and comments from all segments of society.

## **6. ORGANIZATION AND STAFF**

ORGANIZATION AND STAFF

Early in 1972, with the experience of two sets of Public Hearings to build on, an attempt was made to define and establish the professional staff roles and functions that were necessary to support the work of the Authority.

6.1 FUNCTIONAL ROLES AND STAFF

Nine functional roles were identified as follows:

1. Corporate Secretary to the Authority;
2. Stenographic, Clerical and General Office;
3. Secretariat to the Public Advisory Committees;
4. Communications and E.C.A. Publications;
5. Organization and Liaison with Government Task Forces;
6. Relations with Consultants;
7. Research Library Services;
8. Activities of Research Officers; and
9. Executive Assistance to the Chairman.

ate the Public Advisory Committee Secretariat and to handle communications and produce E.C.A. publications. Two experienced scientists were engaged to handle the research activities, and a competent technician was placed in charge of the research library services.

These functions were all brought together under the direction of an Executive Co-Ordinator who also assumed overall responsibility for Government Task Forces and relations with consultants in addition to providing executive assistance to the Chairman.

The position of Administrative Secretary was also further clarified to involve quite separate functions such as accounting and budgeting, personnel relations, purchasing and inventory, and office management, in addition to the organization and recording of E.C.A. Meetings and providing general administrative services to the Chairman.

## 6.2 MEMBERS OF THE AUTHORITY

The Chairmanship of the Authority remained unchanged during the year, but in April the Vice-Chairman resigned to accept a position with the Federal Government. Although at about the same time the Environment Conservation Act was amended to enlarge the membership from three to four, no appointments were made for the remainder of the year and the Authority had to function with two members for most of the year.

## 6.3 STAFF OF THE AUTHORITY

Considerable turnover in staff occurred during the year.

A replacement for the Administrative Secretary who had resigned towards the end of 1971 was hired in January of 1972, but he too resigned in November, thus leaving the Authority without a corporate secretary for the second time in a year.

In January also, the officer in charge of the Calgary Office resigned and the office was closed.

The Professional Librarian who had been with the Authority since shortly after its inception resigned in May and was not replaced since it was decided not to maintain a full fledged library within the Authority.

Two research officers were engaged on a contract basis in the latter half of February and by the end of the year were still technically classified as consultants.

In February also the office staff was reorganized. A bookkeeper was appointed to assist the Secretary with routine accounting duties, and a senior stenographer was assigned to the two Authority members.

A stenographic supervisor was appointed and all other office personnel were placed under her direction. This arrangement has proved to be successful and efficient in practice.

An I.B.M. automated typewriter was acquired at mid year and two of the office personnel were trained in its operation. It has proved to be quite helpful in the production of Environment Conservation Authority publications where considerable revisions in text are involved.



## **7. FISCAL OPERATIONS**



## FISCAL OPERATIONS

The fiscal operations of the Authority were conducted throughout the year in accordance with approved Provincial Government regulations and procedures.

A statement of operations was examined by the Provincial Auditor's Department and the Audit Report for the period ending March 31, 1972 is shown in the following pages.

7.1 LETTER FROM PROVINCIAL AUDITOR

GOVERNMENT OF THE PROVINCE OF ALBERTA

Office of the Provincial Auditor

Edmonton, May 24, 1972.

Chairman,  
Environment Conservation Authority,  
Edmonton, Alberta.

I have examined the Statement of Operations of the Environment Conservation Authority for the year ended March 31, 1972. My examination included a general review of the accounting procedures and such tests of accounting records and other supporting evidence as I considered necessary in the circumstances.

In my opinion this financial statement presents fairly the results of operations of the Authority for the year ended March 31, 1972, in accordance with generally accepted accounting principles applied on a consistent basis throughout the year.

F. C. A.  
Provincial Auditor.

Original signed by: C. K. Huckvale

7.1.1 AUDITOR'S STATEMENT

GOVERNMENT OF THE PROVINCE OF ALBERTA  
ENVIRONMENT CONSERVATION AUTHORITY  
STATEMENT OF OPERATIONS  
FOR THE YEAR ENDED MARCH 31, 1972

Revenue:			
Contributions by the Province of Alberta	\$ 261,843.26		
Bank Interest	<u>280.61</u>		
			\$ 262,123.87
Expenditure:			
Salaries	\$ 106,969.12		
Fees and commissions	63,749.70		
Travelling:			
Staff	\$ 14,090.46		
Other	<u>6,924.68</u>		
		21,015.14	
Printing		15,979.80	
Wages		15,156.74	
Equipment purchases		9,062.99	
Library		6,818.35	
Advertising		5,393.26	
Material and supplies		5,305.19	
Stationery, office supplies and postage		4,667.81	
Equipment rentals		3,522.09	
Telephone and telegraph		2,714.16	
Unemployment insurance		135.25	
Canada Pension Plan		129.26	
Insurance		<u>80.00</u>	
			260,698.86
Excess of revenue over expensiture			<u>\$ 1,425.01</u>
Accounted for as follows:			
Cash on hand and in bank	\$ 2,490.78		
Add: Interest receivable	<u>129.70</u>		
		\$ 2,620.48	
Less: Unpaid accounts		<u>1,195.47</u>	
			<u>\$ 1,425.01</u>

The undernoted expenditure by the Department of Public Works on behalf of the Authority is not reflected in the statement:

Furniture and equipment	\$ 17,409.05
Office Rent	<u>23,564.76</u>
	<u>\$ 40,973.81</u>

## **8. APPENDICES**



APPENDIX 1

THE ENVIRONMENT CONSERVATION ACT, 1970

being Chapter 36 of the Statutes of Alberta, 1970

with amendments up to June 2, 1972; including  
pertinent sections of other acts referring to the

ENVIRONMENT CONSERVATION AUTHORITY

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Office Compilation

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ENVIRONMENT CONSERVATION AUTHORITY

June 1972

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### N O T E

All persons making use of this compilation are reminded that it has no legislative sanction; that the amendments have been embodied only for the convenience of reference, and that the original Acts should be consulted for all purposes of interpreting and applying the law.

THE ENVIRONMENT CONSERVATION ACT, 1970

CHAPTER 36

An Act Respecting Environment Conservation

(Assented to April 15, 1970)

- Short title 1. This Act may be cited as *The Environment Conservation Act*.
- Definitions 2. In this Act,
- [a] "Authority" means the Environment Conservation Authority established under this Act;
  - [b] Repealed. (1971, c. 32, s. 18).
  - [c] "government agency" means
    - [ i ] a corporation that is an agent of the Crown in right of Alberta, or
    - [ii] any corporation, commission, board or other body empowered to exercise quasi-judicial or governmental functions and whose members are appointed by an Act of the Legislature, the Lieutenant Governor in Council, or a Minister of the Crown, or any combination thereof; "Minister" means the Minister Of The Environment.
  - [d] "natural resources" means land, plant life, animal life, water and air;
  - [e] "public advisory committee" means a public committee on environment conservation appointed under Section II;
- Environment Conservation 3. For the purposes of this Act, the following are matters pertaining to environment conservation:

- [a] the conservation, management and utilization of natural resources;
- [b] the prevention and control of pollution of natural resources;
- [c] the control of noise levels resulting from commercial or industrial operations in so far as they affect the environment in the vicinity of those operations;
- [d] economic factors that directly or indirectly affect the ability of persons to carry out measures that relate to the matters referred to in clauses [a], [b] and [c];
- [e] any operations or activities, whether carried on for commercial or industrial purposes or otherwise,
  - [ i ] that adversely affect or are likely to adversely affect the quality or quantity of any natural resource, or
  - [ii] that destroy, disturb, pollute, alter or make use of a natural resource or are likely to do so;
- [f] the preservation of natural resources for their aesthetic value;
- [g] laws in force in Alberta that relate to or directly or indirectly affect natural resources.

Environment  
Conservation  
Authority

4. [1] There is hereby established a corporation called the "Environment Conservation Authority" consisting of four members appointed by the Lieutenant Governor in Council.

[2] The Lieutenant Governor in Council shall designate one of the members of the Authority as chairman and another as vice-chairman.

[3] The vice-chairman is the acting chairman of the Authority in the event of the absence or inability to act of the chairman or in the event that the office of chairman is vacant.

[4] Members of the Authority

[a] shall be paid salaries in accordance with a schedule of salary rates prescribed by the Lieutenant Governor in Council, and

[b] shall be paid their reasonable travelling and living expenses while absent from their ordinary places of residence and in the course of their duties as members of the Authority, at rates prescribed by the Lieutenant Governor in Council.

[5] *The Public Service Pension Act* applies to the members of the Authority.

Meetings

5. [1] The Authority shall meet at the call of the chairman.

[2] A quorum of the Authority shall consist of two members, one of whom shall be the Chairman or the Vice Chairman.

[3] The Authority may make rules respecting the calling of meetings of the Authority and the conduct of business thereat, and generally as to the conduct of business and affairs of the Authority.

Employees

6. In accordance with *The Public Service Act* there may be appointed a secretary and any other employees as may be required for the purpose of providing clerical and secretarial services to the Authority.

Functions  
of  
Authority

7. [1] The Authority

[a] shall conduct a continuing review of policies and programs of the Government agencies on matters pertaining to environment conservation and shall report thereon to the Minister.

[b] may after consultation with the Minister inquire into any matter pertaining to environment conservation and make its recommendations and report thereon to the Minister;

- [c] shall, when required to do so by an order of the Lieutenant Governor in Council, inquire into any matter pertaining to environment conservation that is specified in the order and make its recommendations and report thereon to the Lieutenant Governor in Council;
- [d] may require any officers or employees of any department of the Government or any government agency to provide information that, in the opinion of the Authority, is necessary for the purposes of enabling it to carry out its responsibilities;
- [e] may, and when required to do so by an order of the Lieutenant Governor in Council or of the Minister shall, hold public hearings for the purpose of receiving briefs and submissions or any matter pertaining to environment conservation, and shall report thereon to the Lieutenant Governor in Council and the Minister.
- [f] may from time to time as it considers necessary, but at least once a year, hold joint meetings with the public advisory committees;
- [g] may refer any matter pertaining to environment conservation to the Department of the Environment for its recommendations and report thereon;
- [h] may engage the services of persons having special technical or other knowledge in connection with an inquiry of any matter pertaining to environment conservation that the Authority with the approval of the Minister has undertaken or proposes to undertake;
- [i] through the medium of the Department of the Environment shall use its best efforts to achieve co-ordination of policies, programs and administrative procedures of the Government and government agencies relating to matters pertaining to environment conservation;

- [j] shall make a report in each year to the Minister
  - [ i] summarizing generally its activities and affairs in the preceding year,
  - [ ii] summarizing the recommendations made by it to the Minister and to the Department of the Environment the preceding year, and
  - [iii] showing any reports or studies prepared in the preceding year at the request of the Minister.
- [2] When a report by the Authority under subsection [1], clause [j] is received by the Minister, the Minister shall lay a copy of it before the Legislative Assembly if it is then in session and if not, within 30 days after the commencement of the first session in the next ensuing year.
- 8. [1] Subject to the approval of the Minister, the Authority may make such banking arrangements as are necessary for the carrying out of its duties and functions.
- [2] The fiscal year of the Authority is the period from April 1st to the next succeeding March 31st.
- [3] The Authority is in respect of its accounts and financial transactions subject to audit by the Provincial Auditor from time to time and at least once every year.
- [4] The Provincial Treasurer shall pay to the Authority the moneys appropriated by the Legislature for the purposes of the Authority [except the moneys appropriated for the salaries payable to the members and employees of the Authority] in equal monthly instalments unless otherwise agreed between the Authority and the Provincial Treasurer.
- [5] Subsistence and travelling allowances payable to the employees of the Authority under the regulations under The Public Service Act shall be paid by the Authority from its funds.

9. Repealed. [1971, c. 32, s. 18]

10. Repealed. [1971, c. 32, s. 18]

Public  
advisory  
committees

11. The Authority after Consultation with the Minister, may

[a] appoint one or more public advisory committees on environment conservation, and

[b] prescribe the duties and functions of a public advisory committee.

[c] Repealed. [1971, c. 32, s. 18]

Regulations

12. The Lieutenant Governor in Council may make regulations

[a] providing for any procedure or matter for the purpose of facilitating the functions of the Authority, or a public advisory committee and the relations between them,

[a1] prescribing the rates of remuneration to be paid to members of a public advisory committee for their travelling and living expenses incurred in the course of their duties as members of a committee, and

[b] providing for any other matter considered necessary to carry out the purposes of this Act.



# THE CLEAN AIR ACT, 1971

## CHAPTER 16

Referral to  
Environment  
Conservation  
Authority

7. (8) Where an appeal is made under subsection (7), the Minister shall refer the appeal and the stop order to the Authority for an inquiry.

(9) The Authority shall

- (a) hold a hearing to inquire into all matters leading to the making of the stop order, and
- (b) determine whether, in its opinion, there were sufficient grounds for the making of the stop order,

and upon completion of the inquiry the Authority shall report its findings to the Minister together with any recommendations it wishes to make in regard to the confirmation, amendment or revocation of the stop order.

(10) Upon receipt of the report of the Authority the Minister shall either confirm, amend or revoke the stop order and shall notify accordingly the person to whom it is directed.

(11) The Minister may

- (a) amend a stop order if he considers it advisable in the circumstances to do so, or
- (b) revoke a stop order.

and shall accordingly notify the person to whom the stop order was directed.

(12) This section applies whether or not the contravention of the Act, regulation or order concerned constitutes an offence and whether or not a conviction has been adjudged for the offence.

THE CLEAN WATER ACT, 1971

CHAPTER 17

Referral to  
Environment  
Conservation  
Authority

7. (8) Where an appeal is made under subsection (7), the Minister shall refer the appeal and the stop order to the Authority for an inquiry.

(9) The Authority shall

(a) hold a hearing to inquire into all matters leading to the making of the stop order, and

(b) determine whether, in its opinion, there were sufficient grounds for the making of the stop order,

and upon completion of the enquiry the Authority shall report its findings to the Minister together with any recommendations it wishes to make in regard to the confirmation, amendment or revocation of the stop order.

(10) Upon receipt of the report of the Authority the Minister shall either confirm, amend or revoke the stop order and shall notify accordingly the person to whom it is directed.

(11) The Minister may

(a) amend a stop order if he considers it advisable in the circumstances to do so, or

(b) revoke a stop order,

and shall notify accordingly the person to whom the stop order was directed.

(12) This section applies whether or not the contravention of the Act, regulation or order concerned constitutes an offence, and whether or not a conviction has been adjudged for the offence.

THE DEPARTMENT OF THE ENVIRONMENT ACT, 1971

CHAPTER 24

Referral to  
Environment  
Conservation  
Authority

16. (8) Where an appeal is made under subsection (7), the Minister shall refer the appeal and the stop order to the Authority for an inquiry.

(9) The Authority shall

- (a) hold a hearing to inquire into all matters leading to the making of the stop order, and
- (b) determine whether, in its opinion, there were sufficient grounds for making of the stop order,

and upon completion of the inquiry the Authority shall report its findings to the Minister together with any recommendations it wishes to make in regard to the confirmation, amendment or revocation of the stop order.

(10) Upon receipt of the report of the Authority the Minister shall either confirm, amend or revoke the stop order and shall notify accordingly the person to whom it is directed.

THE WILDERNESS AREAS ACT, 1971

CHAPTER 114

Referral to  
Environment  
Conservation  
Authority

4. The Environment Conservation Authority when requested by the Lieutenant Governor in Council shall hold public hearings for the purpose of receiving and hearing submissions and representations respecting.

- (a) any recommendations made by the Advisory Committee under Section 2, subsection (7) or the report of the Advisory Committee under Section 3, subsection (2), or
- (b) any proposal made by the Executive Council for the establishment of a new wilderness area or the addition of any lands to, or the withdrawal of any lands from, an existing wilderness area, or
- (c) any other matters pertaining to the administration and management of wilderness areas.

## APPENDIX 2

### PUBLIC ADVISORY COMMITTEE ON THE ENVIRONMENT

#### MEMBERS

Mr. G. Aalborg  
Mayor A.C. Anderson  
Mr. C.E. Anderson  
Dr. F. Baker  
Mr. J.E. Baugh  
Dr. C. Bird  
Mr. G.R. Brownlee  
Dr. A.L. Bryan  
Mrs. H. Buckmaster  
Mr. J.M. Byers  
Mr. G. Cameron  
Mr. R. Chambers  
Mrs. P. Chern  
Mr. R.G. Crother  
Mr. A.C. Dunkley  
  
Mr. S. Dymianiw  
Mr. T.A. Edwards  
  
Mr. A.L. Evans  
  
Mr. S. Fritter  
Mr. J.G. Gainer  
Mr. J.Y. Gouin  
Mr. J. Gregory  
Dr. G.C.A. Griffiths  
  
Dr. H. Habgood

#### NOMINATING ORGANIZATION

Wild Kakwa  
City of Lethbridge  
Unifarm  
Alberta Veterinary Medical Association  
Calgary Chamber of Commerce  
Federation of Alberta Naturalists  
City of Wetaskiwin  
Archaeological Society of Alberta  
Calgary Local Council of Women  
Alberta Pharmaceutical Association  
Edmonton Chamber of Commerce  
M.L.A. Progressive Conservative Party  
Alberta Association of Registered Nurses  
Alberta Motor Association  
National & Provincial Parks Association of  
Canada (Calgary/Banff Chapter)  
Alberta Public Health Association  
Canadian Water Resources Association of  
Canada  
Independent Petroleum Association of  
Canada  
Alberta Federation of Labour  
Canadian Petroleum Association  
Alberta Roadbuilders Association  
Research Council of Alberta  
National & Provincial Parks Association of  
Canada (Edmonton Chapter)  
Alpine Club of Canada

Mayor S. Hafso	Alberta Urban Municipalities Association
Mr. G. Hamilton	Canadian Youth Hostel Association
Mr. G. Hamilton	University of Lethbridge Students' Society
Mr. P. Hebbelthwaite	Alberta Commercial Fishermen' Association
Mr. L. Henderson	Unifarm
Dr. J.M. Howell	Alberta Medical Association
Mrs. A.P. Hunter	Consumer's Association of Canada
Mr. E.T. Jones	Alberta Wildlife Foundation
Mr. F.C. Jorgenson	Southern Alberta Institute of Technology
Mr. H. Krusche	Chemical Institute of Canada
Mr. A. Lampitt	Alberta Teachers' Association
Mr. N.A. Lawrence	Association of Professional Engineers, Geologists, and Geophysicists of Alberta
Dr. A. Laycock	Alberta Geographical Society
Dr. P.D. Lewis	Pollution Control - Southern Alberta
Mr. C.A. MacLean	Alberta School Trustees Association
Mr. R.T. Marshall	Coal Association of Canada
Mr. R.E. McAllister	Alberta Institute of Agrologists
Mr. K.W. McAmmond	Canadian Institute of Public Health Inspectors - Alberta Branch
Mr. K. McAra	Alberta Junior Chamber of Commerce
Dr. B.C. McInnis	University of Lethbridge
Mr. J. McIntosh	Alberta Association of Architects
Mr. G. McNabb	Alberta Wilderness Association
Alderman D.B. Menzies	City of Edmonton
Mrs. J.T. Morrisroe	Alberta Women's Institute
Mr. T.C. Noble	Alberta Irrigation Projects Association
Mr. L. Novac	Alberta Association of Landscape Architects
Mr. T. O'Keefe	Alberta Fish and Game Association
Dean W.T. Perks	University of Calgary
Dr. K. Puffer	Northern Alberta Institute of Technology
Mr. P. Putland	Canadian Manufacturers' Association
Mr. D.H.G. Rankine	Alberta Chamber of Commerce
Dr. R.W. Reid	Canadian Institute Of Forestry

Mr. C.N. Reimer	Alberta Federation of Labour
Mr. W. Ross	Canadian Manufacturers' Association
Dr. G. Rostoker	University of Alberta
Mr. A.A. Rytz	Alberta Forest Products Association
Dr. W. Shultz	University of Alberta
Mr. W.L. Scott	City of Medicine Hat
Dr. G. Scotter	Canadian Society of Wildlife and Fishery Biologists (Alberta Chapter)
Mrs. L. Scraba	Women of Unifarm
Mr. D.H. Smith	Canadian Meteorological Society
Mr. R. Steinhauer	Indian Association of Alberta
Dr. E.L. Tollefson	University of Calgary
Ms. L. Tyler	Young Women's Christian Association
Mr. J. White	Law Society of Alberta
Mr. D. Wighton	Edmonton Anti-Pollution Group (S.T.O.P.)
Mr. A. Wigmore	Alberta Association of Municipal Districts and Counties
Ms. P. Wishart	University Women's Club of Edmonton
Mr. R. Zander	M.L.A. Progressive Conservative Party



PUBLIC ADVISORY COMMITTEE  
ON  
ENVIRONMENTAL SCIENCES

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Dr. D. D. Boag	University of Alberta
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Dr. E. E. Daniel	University of Alberta
Professor P. M. Dranchuk	University of Alberta
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MEMBERS

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Dr. I. Hastings	Alberta Dept. of Education
Dr. K. Kamra	Northern Alberta Institute of Technology
Mr. C.N. Reed	Southern Alberta Institute of Technology
Mr. E. Smith	Dept. of Culture, Youth & Recreation
Mr. D. Spalding	Museum and Archives of Alberta
Mrs. V. Sunohara	Alberta Teachers Association

PUBLIC ADVISORY COMMITTEE  
ON THE CONSERVATION OF  
ARCHAEOLOGICAL & HISTORICAL RESOURCES

Dr. L. A. Bayrock	Research Council of Alberta
Dr. A. L. Bryan	University of Alberta
Mr. H. A. Dempsey	The Glenbow Foundation
Mr. A. W. Farmilo	Supertest Investments & Petroleum Ltd.
Dr. R. G. Forbis	Canadian Archaeological Association
Mr. R. O. Harrison	Provincial Museum & Archives of Alberta
Mr. A. Johnston	Canada Dept. of Agriculture - Research Station
Mr. J. G. MacGregor	Author - Historian
Chief J. Snow	Alberta Indian Association

APPENDIX 3

REPORT

THE CONSERVATION OF HISTORICAL  
AND  
ARCHAEOLOGICAL RESOURCES IN ALBERTA

Prepared By

THE PUBLIC ADVISORY COMMITTEE ON  
THE CONSERVATION OF HISTORICAL  
AND ARCHAEOLOGICAL RESOURCES

March, 1972

COPIES OF THIS REPORT ARE AVAILABLE  
UPON REQUEST TO THE  
ENVIRONMENT CONSERVATION AUTHORITY  
9912 - 107 STREET  
EDMONTON, ALBERTA



FACULTY OF ARTS AND SCIENCE

DEPARTMENT OF ARCHAEOLOGY

March 16, 1972.

Dr. Walter R. Trost, Chairman  
Environment Conservation Authority  
9912 - 107 Street  
EDMONTON, Alberta

Dear Dr. Trost,

I have the honour to submit the accompanying report, entitled "The Conservation of Historical and Archaeological Resources in Alberta", which has been prepared by the Public Advisory Committee on the Conservation of Historical and Archaeological Resources for the Environment Conservation Authority. In this report, the Committee has attempted to provide an objective analysis of the nature and extent of historical and archaeological resources in Alberta, of the forces that may bring about their destruction, and of methods for preservation that have been adopted elsewhere to conserve these resources.

The Committee recommends that the report be made available for public distribution.

Very respectfully yours,

R.G. Forbis, Chairman, Public  
Advisory Committee on Historical  
and Archaeological Resources

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## PART 1

### THE PROJECT

#### 1.1 REQUEST FOR STUDY

On June 21, 1971, in response to a submission sent to the Government of Alberta by the Canadian Archaeological Association, Dr. W.R. Trost, Chairman of the Environment Conservation Authority, established a Public Advisory Committee on Conservation of Historical & Archaeological Resources. Those who have served on the Committee on a voluntary basis have been R.G. Forbis, Chairman; H.A. Dempsey, Vice-Chairman; R.O. Harrison, Secretary; and L.A. Bayrock, A.L. Bryan; A.W. Farmilo; Alex Johnston; J.G. MacGregor; and John Snow.

#### 1.2 PRIMARY OBJECTIVES

The Committee was guided by its terms of reference: To study and make recommendations on legislation and programs desirable for the conservation of historical and archaeological resources.

#### 1.3 THE RATIONALE

After due consideration and examination, the Committee concluded that the need for effective legislation and positive programs was clear. The Committee is agreed that the cultural heritage of Alberta is one of its most valued and important assets. The public has an interest in seeing that these resources are preserved for their scientific, educational aesthetic and recreational values, and that the destruction of these resources would be an irreplaceable loss for all future generations. It is therefore essential that action be taken, through legislation, programs and public education, to assure that sites, structures and objects of historical and archaeological value are preserved.

#### 1.4 GENERAL APPROACH

In order to draw together the information and background data, the Committee undertook a number of tasks:

1. Acquired and examined legislation and proposed legislation from a number of Canadian provinces, American states, and federal governments of North America, Europe and Africa.
2. Invited persons with a specialized knowledge or background in historical and archaeological preservation programs to attend meetings and to present their views.
3. Examined existing Federal and Provincial legislation which has any bearing upon historical and archaeological sites in Alberta.
4. Acquired and examined literature and policy statements from such organizations as UNESCO, National Trust for Historic Preservation, and other national and international bodies.
5. Formulated courses of action, through legislation and through programs, which might effectively preserve and utilize significant sites and objects.

#### 1.5 DEFINITIONS

For the purpose of its study, the Committee decided that historical and archaeological sites may include parcels of land, structures, buildings, or remains which are evidence of man's presence in Alberta; and that historical and archaeological objects are those related to such sites.

## PART 11

### ORIGIN AND EXTENT OF SITES

Sites, structures and remains of historical and archaeological interest which exist in Alberta have been created by our earlier inhabitants. These sites may range in time from Paleo-Indian campsites of more than ten thousand years ago to cabins of pioneer settlers built within the present century. Alberta's recorded history goes back only some 200 years when Anthony Henday of the Hudson's Bay Co. first visited the area, yet its prehistory of native occupation is centuries old. In total, these sites and structures form a picture of the people and events which make up the historical heritage of Alberta.

#### 2.1 ARCHAEOLOGICAL RESOURCES

Archaeological sites include any locus of prehistoric activity; in Alberta these generally date from the time before 1800 A.D. They include findspots of single artifacts; large composites of the prehistoric Indian tribes; buffalo jumps; cairns; tipi rings; pictographs; and other manifestations, either on the surface or beneath it. Archaeological discoveries extend the record of man's habitation in Alberta back at least 10,000 years. While this is considerably longer than the historical record, it is far more incomplete. The prehistoric occupants were primarily nomadic hunters, fishers and gatherers, and little of what they left behind has stood the test of time.

Prehistoric occupation was most intensive in the plains area, as the buffalo provided a large and dependable food resource over a long period of time. The forested country in the north provided a less reliable and considerably smaller food reserve. In the mountains, occupation was virtually limited to the valleys.

According to the Council for Canadian Archaeology, it is impossible to estimate the extent of archaeological resources anywhere in Canada, and Alberta is no exception. But they must be enormous. Even if one postulates only 50,000 individuals living at one time, the number of pre-historic inhabitants of Alberta through time would be at least 15,000,000 (50,000 multiplied 3 generations per century, multiplied by 100 centuries). Each individual was a tool maker.

The main problem inherent in directly estimating the extent of archaeological resources is that site inventories have just begun. But some indication is possible based on an intensive but still incomplete survey in 1969 and 1970 of the City of Calgary. Archaeologists located 162 sites; previous to that time, only 5 were known. The list of 162 sites (half of which, incidentally, have now been destroyed) does not of course include sites still buried and invisible in the earth. From these figures, it is evident that only the grossest estimate of the number of archaeological sites in Alberta is possible. Several hundreds of thousands may be present, although only a small fraction is worthy of preservation or salvage. The Palaeo-Indians were the first inhabitants of Alberta. They hunted large animals, of which many species are now extinct but which inhabited the area after the huge glaciers retreated to the north. These people, who lived in the area from the time of man's first occupation until about 5,000 years ago, can be most easily traced today by their projectile points. Most common of these are the Clovis points, a unique example being found in a trench during street construction in Lethbridge; the Folsom points, which to date have been found in Alberta only on the surface; and the Yuma points, examples of which have been found in situ near Taber and Gleichen.

No human remains or extensive camps of these ancient people have yet been found.

The next group to occupy the area were the Meso-Indians, who were here from about 5,000 years ago until about 1,500 years ago. A number of sites have been found in Alberta to show that these people lived primarily upon the buffalo and other big game. Among the discoveries in Alberta are hints of a copper culture, as revealed by a crescent-shaped artifact made of native copper found near Castor. Projectile points from this period have distinctive characteristics and are identified as Oxbow, McKean, Pelican Lake, and Besant Points.

The most recent peoples to occupy Alberta were the Neo-Indians, who were the immediate ancestors of the present tribes of this region. Much of the archaeological work which has been conducted in Alberta has been concentrated on these people. One of the most productive types of site has been the buffalo jump, which was a cliff over which the animals were driven to their death. A particularly rich site, although one which has been heavily vandalized, is the Old Women's Buffalo Jump, west of Cayley. As a result of cultural deposits over 20 feet deep, continuous occupation of the area can be traced for about 1,500 years. Like a calendar of events, the layers of buffalo bones intermingled with stone projectile points and tools, give a unique picture of the developments and changes in native culture.

This recent period also is one which produced native paintings and carvings upon stone cliffs and walls. Writing-on-Stone, east of Milk River, is rich in picture writings of buffalo, horses, pre-horse men bearing large shields, and other illustrations. These, too, are being badly damaged by vandals. Other evidences are tipi rings which are found in many places on the plains; large stone cairns

which may have had a religious significance; boulders laid out on the ground to form images of men and animals; and campsites which are often found in cutbanks and along river valleys. In a few areas there also were unique formations, such as large glacial erratics, which were venerated by the Indians; offerings often were left at these places and religious markings placed upon the stones.

## 2.2 HISTORICAL RESOURCES

Historical sites may be defined as localities, buildings and structures (1) that are associated with events that have made a significant contribution to the broad patterns of history; (2) that are associated with the lives of persons significant in the past; (3) that embody the distinctive characteristics of a type, period, or method of architectural construction; or (4) that have yielded, or may be likely to yield, information important in history. The extent of historical resources in Alberta is at present unknown. During the past two years, however, the Provincial Museum and Archives has completed a partial inventory in conjunction with the National Historic Sites Service. The inventory, primarily of sites in central Alberta, consists of a record of about 8,000 sites, some 300 of which are deemed exceptionally worthy of preserving. Plans are afoot to complete the survey for the entire province; until that is done, only a wild guess can be made. Perhaps several hundred sites will ultimately be found to be worthy of preservation, and many more will require some action in the form of recording plans and preparing illustrative material.

From the time the white man built his first trading post in Alberta in the late 1700's, he has left his mark upon this province. Along such watercourses as the North Saskatchewan, Peace and Athabasca Rivers are numerous trading post sites, reminders of the battle between the



North West Co. and Hudson's Bay Co. for rich furs of the area. Some of these sites already have been set aside as Provincial Parks, but pot hunting and vandalism is not uncommon. Relatively few of these sites have actually been excavated.

Following the traders were the missionaries, who built churches at many places throughout the province. In some cases, the original buildings have survived and are being preserved by private or public bodies. Among these are Father Lacombe's mission at St. Albert; Rev. John McDougall's mission at Morley; the McDougall Church in Edmonton; and St. Charles Mission at Dunvegan. Other missions, such as Victoria and Rundle's Mission at Pigeon Lake, have lost their original structures but are preserved as sites.

With the opening of the West, commencing in about 1880, many more structures were built and have survived. The original ranch-house of the Cochrane Ranch west of Calgary; the Oxley Ranch west of Pulteney; the block-house, built for the Riel Rebellion in 1885, north of Wetaskiwin; the John Walter house at the ferry crossing in Edmonton; and the original home of Charles Ora Card, who brought the first Mormons into Alberta in 1887 -- these are but a few examples. For this period many of the important sites consist of log or stone buildings, many of them being located in or near urban areas. Some, such as the buildings and stockades of Fort Edmonton, were torn down as early as 1915 to make way for urban development. However, as recently as 1969, the first home of Senator James Lougheed was demolished in Calgary.

During the Twentieth Century, many more sites of historical interest have been created. Some of these reflect the large immigration from Europe, giving us structures which are unique or important to such groups as Ukrainians, Germans, French, and Scandinavians, as well as many religious

groups including Eastern rite churches, Protestant and Catholic churches, and Hutterite colonies.

The sum total of fur trading posts, missions, Mounted Police forts, ranch houses, homesteads, churches, ethnic structures, early industries and public buildings gives us a cross section of the history and culture of Alberta. Added to this are the homes of such famous people as Premier Rutherford and Sir Frederick Haultain; the sites of historic events such as the signing of the Blackfoot Treaty; and the myriad network of pioneer trails and water routes used by early pioneers. In some places, the original Calgary-Edmonton trail can still be seen.

Some of these sites and structures are being preserved, but others are being destroyed through neglect. Still others have not yet been discovered and remain in danger as long as their existence is unknown. Only within the last few years has any attempt been made to create an inventory of historic and prehistoric sites. None of these surveys has progressed beyond the preliminary stages.

## PART 111

### PRESENT SITUATION

#### 3.1 EXISTING PROVINCIAL LEGISLATION IN ALBERTA

Concern for the protection of historical and archaeological sites in Alberta is barely expressed in present legislation. Archaeological sites and objects are not specifically mentioned, but rather are regarded either as natural resources or as remains of historical or scientific interest. The law does recognize some historic sites on lands owned by the Crown, and does protect them to the extent of requiring persons to obtain permission from the appropriate authority to enter, explore or excavate provincial lands for remains of historical or scientific interest.

The Historic Sites Advisory Committee established under the Alberta Heritage Act, advises the Minister on all matters related to historic sites; apparently it overlaps to some extent with the Provincial Parks Board, which also assists its Minister in formulating policies for the administration and development of historical sites and natural areas. At present, legislation regulating activities on public lands is inadequate to prevent destruction of historical and archaeological resources, whether on a small scale or large.

Relevant sections of current legislation, summarized above, are provided in the following extracts:

##### 3.1.1 The Public Lands Act, 1966

20. (1) The Minister may authorize any person
  - (a) to enter upon or occupy public land for a stated period for the purpose of
    - (i) conducting appraisals, inspections, analyses inventories or other investigations of the natural resources which may exist thereon, or

- (ii) exploring for or excavating fossil remains or objects of geological, ethnological, historical or scientific interest.

3.1.2 The Provincial Parks Act, 1964.

- 2. In this Act,
  - (b) "disposition" means an instrument heretofore or hereafter entered into or issued by which any estate or interest in any public lands contained within the boundaries of a park, historical site, natural area or wilderness area is granted by or on behalf of the Crown to any person;
  - (d) "Historical site" means land established as a historical site pursuant to this Act.
- 4. (1) There shall be a Board called the Provincial Parks Board.
  - (4) The Board shall act in an advisory capacity to the Minister for the purpose of assisting him to formulate policies for the administration and development of parks, historical sites, natural areas and wilderness areas.
- 7. the Minister may
  - (a) declare a structure or object or any natural thing to be an "historical object".
- 8. The Lieutenant Governor in Council may
  - (a) by regulation
    - (i) designate land that is owned by or leased to the crown as a park, historical site, natural area or wilderness area and declare the name by which it is to be known, and
    - (ii) increase or decrease the area of land designated as a park, historical site, natural area or wilderness area.
- 9. The Lieutenant Governor in Council may make regulations with respect to parks, historical sites, natural areas and

wilderness areas

- (h) governing the exploration for and excavation of fossils and other objects of geological, ethnological historical or scientific interest.

11. Except as otherwise provided in these regulations, The Game Act, The Forests Act, 1961 and The Public Lands Act apply to parks, historical sites, natural areas and wilderness areas.

### 3.1.3 Other Provincial Acts

The Alberta Heritage Act, 1970, authorized the establishment of the Provincial Museum and Archives for the purpose of preserving and promoting the appreciation and knowledge of the heritage of Alberta. The various provisions are largely designed to provide for the internal operations of the Museum and Archives.

The Alberta Heritage Act, however, also establishes "The Historic Sites Advisory Committee" to advise the Minister on all matters related to historic sites, presumably regardless of whether or not such sites are germane to the purposes of the Museum and Archives. The committee has on occasion extended advice on archaeological sites.

The Glenbow-Alberta Institute Act, 1966, authorized the Institute to promote and encourage the acquisition and diffusion of knowledge of man, his arts, his history and the nature of the world in which he lives, in such a manner as to best serve the educational and cultural needs of Alberta. The regulations, again, govern the internal operation of the Institute, not activities of the general public.

## 3.2 LEGISLATION APPLICABLE TO FEDERAL LANDS IN ALBERTA

The Indian Act, in addition to prohibiting trespass on reserves, prohibits any person from acquiring title to, removing, utilating and destroying an Indian grave house;

a carved grave pole, a totem pole, a carved house post; or a rock embellished with paintings or carvings, unless these chattels are manufactured for sale by Indians. Further, no person may remove or permit anyone to remove from a reserve, minerals, stone, sand, gravel, clay or soil, without the consent of the Minister.

The Historic Sites and Monuments Act authorizes the Minister to mark or commemorate historic places. He may acquire historic places or lands for historic museums, and provide for the administration, preservation and maintenance of any historic places or museums.

The National Parks Act empowers the Governor in Council to make such regulations as he deems expedient to preserve, control and manage the parks. No person is permitted to deface any natural object in a park, and no person shall remove or displace any rock, mineral, fossil or other object of natural curiosity or interest without permission in writing from the Director.

### 3.3 OTHER LEGISLATION IN CANADA

Except for Alberta, all provinces have adopted legislation ("antiquities laws") designed specifically to protect historical and archaeological resources. Federal legislation covers the Yukon and Northwest Territories, as well as parks, Indian reserves, and other federal properties. Some of this legislation is as follows:

1. Archaeological and Historic Sites Protection Act, 1960. (British Columbia).
2. The Provincial Parks, Protected Areas, Recreation Sites and Antiquities Act, 1960. (Saskatchewan)
3. The Historic Sites and Objects Act. (Manitoba)
4. The Archaeological and Historic Sites Protection Act. (Ontario)
5. Historic Monuments Act. (Quebec)
6. Historic Sites Protection Act. (New Brunswick)

7. The Historical Objects Protection Act. (Nova Scotia)
8. The Historic Objects, Sites and Records Act, 1959.  
(Newfoundland)
9. Northwest Territories Archaeological Sites Regulations.
10. Yukon Archaeological Sites Regulations.

Legislation is not uniform, and no where has it been particularly effective in preventing the destruction of historical and archaeological remains. According to the Council for Canadian Archaeology, the laws share several basic defects:

(1) Seldom is provision made for an active program with adequate staff. No matter how desperate an emergency may be, it often goes unattended because qualified persons are not on hand to take action. Even where they may be available, they normally must owe first allegiance to the university or museum that employs them. The result is that historians and archaeologists do what they can, where they can. The overall approach is uneven and uncoordinated.

(2) The laws make no provision for adequate funding. This is particularly serious when sites are endangered by natural forces, and no individual or organization except the government can be held responsible for the costs of preservation or salvage. Similarly, these costs are frequently not assumed by individuals, corporations and governmental agencies even when they are clearly responsible for the destruction of sites. Lack of funds also prevents historians and archaeologists from compiling inventories of the resources in their area of competence. Thus, they are frequently completely unaware of the nature and extent of destructive forces at work.

(3) The laws are not effectively administered; as the Council puts it, they are "toothless". Actually,



penalties for violation are reasonably severe, but they are rarely, if ever, imposed. The main problem appears again to come back to inadequate staffing. Rarely does legislation provide for a Provincial Historian or Provincial Archaeologist whose duties include enforcement of the regulations.

(4) The responsibility for the preservation or salvage of historical and archaeological sites is usually not clearly defined, with the result that no one accepts responsibility, and sites are irreparably destroyed or irretrievably lost. But a concept parallel to that of "the polluter pays" is manifest in some provincial legislation, and many federal regulations are based on the same principle.

### 3.4 CONSERVATION POLICIES ELSEWHERE IN THE WORLD

In 1956, the United Nations Educational, Scientific and Cultural Organization recommended that all member states take steps, appropriate to each, to adopt legislation and establish programs to protect archaeological and historical resources. A central service was recommended; it was to be adequately and regularly financed and staffed by qualified persons. Among its duties, it was to administer, supervise and carry out an active program of excavation, restoration and maintenance of sites; compile a central registry of sites; exercise control of activities affecting sites; and cooperate with other agencies concerned with archaeological and historical resources; publish literature; and establish an effective educational program. The recommendation also urged measures to prevent illicit traffic in antiquities, and this resolution was strengthened in a later recommendation by Unesco.

By 1956, most countries had already passed legislation protecting their historical and archaeological heritage. Canada remained a partial exception, since the provinces

control sites on provincial lands, and since several provinces, like Alberta, had not yet taken protective measures. On the other hand, the United States had passed protective legislation in 1906, and many countries richer in historical and archaeological remains had offered protection in law at a much earlier time. The coverage offered by the laws is highly variable; they are in general appropriate to the nature of the resources in each country.

Renewed concern with the historical and archaeological heritage has been expressed in several countries. This concern no doubt reflects the growing public awareness that the resource is rapidly vanishing. Thus, in the United States, several laws have recently passed Congress; they are particularly applicable to buildings, structures and places of historical interest. Much of this concern is in anticipation of the bicentennial celebrations of the signing of the Declaration of Independence, but archaeological sites are also covered. In France, legislation is being amended to fit the present situation, and a vigorous program of restoration is being carried forward. Again, historical monuments and buildings are the primary target of these programs, but archaeological sites are included.

The general tightening of regulations in countries throughout the world is a product in part of trafficking in antiquities, which are finite in numbers, while the growing demand for them is infinite. Their scientific and historical value remains constant, but their commercial value will inevitably increase phenomenally. Therefore, such countries as Egypt, Peru and Mexico are taking even stricter measures to prohibit the export of their rich historical and archaeological objects. In Canada, such legislation is enforceable only by federal authorities, and is beyond provincial scope.

## PART IV

### DESTRUCTION OF SITES

There are a number of common agencies which are destroying sites of both historical and prehistoric significance. One destructive group results from the activities of man, and may be divided into two categories -- construction and vandalism. A second group consists of the destructive forces of nature.

#### 4.1 CONSTRUCTION

In the first group, the most common construction projects which destroy historical or archaeological sites are dams and other irrigation and hydro-electric projects, pipelines, logging operations, mines, and industrial plants.

Another destructive agency is highway construction, including such related activities as borrow pits, detours, etc.

Urban development also is a destroyer. This includes housing and commercial projects, parks, golf courses, recreational areas and airports.

A fourth category is rural development, including cultivating, levelling and irrigating of farms; the construction of hunting lodges, summer cottages, parks and recreational areas and the building of air strips.

Sometimes voices of protest are heard, as citizens recognize that their heritage is being lost. A proposed highway that would destroy the Cochrane ranch-house; university expansion which would destroy the Premier Rutherford home, and other similar activities have been halted, perhaps only temporarily, by public outcry. But other forms of destruction have continued. An archaeologist estimated that a number of potential sites, both large and small, were destroyed last year by the new Highway No. 2 route north out of Calgary. Several sites will be destroyed by the Bighorn Dam. A farmer ploughed over a fort

site on his property because it was in his way. And how many unknown prehistoric sites have been destroyed by pipelines, roads, and industrial projects? The loss of a number of tipi rings at a gravel borrow pit east of Lethbridge is only a minor example.

Obviously, not every site can be saved. A highway cannot deviate from its route because of a tiny campsite, nor can a factory fail to build a new plant because it may destroy a number of tipi rings.

In other parts of the world, this problem has been resolved through salvage archaeology. Through this process, the archaeologist or historian has the opportunity to make the scientific investigations before destruction takes place. Many pipeline companies in the United States, for example, provide for an archaeologist to survey a new line before construction, and to excavate any sites which he might find in its path.

There are, however, other sites which are too important to destroy. While Alberta's structures may not be as old as some of those from the civilizations of Europe, in time they will become increasingly recognized as a part of Alberta's heritage. Rev. John McDougall's mission west of Calgary may be just 97 years old, yet its construction occurred only eight years after Canada's Confederation; 30 years before the Province of Alberta was formed; and 10 years before the Canadian Pacific Railway was completed. As that log structure arose on the prairies overlooking the Bow River, it was surrounded by a wilderness controlled by the Stony, Blackfoot and other Indian tribes.

#### 4.2 VANDALISM

Vandalism is in a class by itself, for the destruction often is deliberate. One of the most common types of vandalism occurs when a tourist carves his initials over an ancient

pictograph or a hunter takes pot shots at it with his rifle. Even more destructive, however, is the vandalizing of sites which could provide scientific knowledge about our past. The collecting of arrowheads and similar objects is a popular hobby, and to some it is a lucrative business. No great harm is done when such artifacts are found in sand blowouts or in farmers' fields, but too often they are discovered beneath the surface or in cutbanks just as they were left thousands of years ago. When a professional archaeologist excavates such a site, he can learn much about the people who created the objects -- their time period, basic economy, and in some cases their religion and daily life.

But if the arrowhead collector or pot hunter gets there first, he will often destroy all scientific evidence in his eagerness to add to his collection. Even in cases where a site has been discovered and supposedly protected, pot hunters have been known to enter the area clandestinely, often with power machinery, in their destructive search for souvenirs or for objects to sell. When such people are finished, they leave behind the shattered remains of a campsite or cairn which might have added to our skimpy knowledge of ancient man. The rich buffalo jump sites west of Fort Macleod and west of Cayley are prime examples of areas which have been badly vandalized in this manner. such destruction is not limited to prehistoric remains. Early trading posts sites at many points in Alberta have been vandalized, many by pot hunters with modern metal detectors, mechanical screens and other power equipment. Existing structures, too, have suffered from vandals carving initials in woodwork and sometimes burglarizing the contents of such sites.

#### 4.3 NATURE

The forces of nature, while not usually caused by man's activities, can often be controlled or harnessed. Most common are erosion caused by rivers and lakes; wind erosion; natural decay; and destruction caused by the variable winter/summer effects upon the soil.

Some sites, such as Fort Fork near Peace River, and Rocky Mountain House, have already been partly destroyed by water erosion. Some pictographs have been eroded by the wind, while during such dry periods as the 1930's, many ancient campsites were blown away. Natural decay has destroyed historic buildings, while variable temperatures have damaged such sites as the pictographs at Writing-on-Stone. In some cases, preservation was impossible, but in many others, the people of Alberta have allowed their heritage to be lost through neglect or through the failure to find a balance between industrial progress and their cultural identity.

PART V

ENDANGERED AND DESTROYED SITES

The following are a sample of the known sites which have been destroyed or are in danger of being destroyed in Alberta.

5.1 ENDANGERED SITES

Cochrane Ranch	West of Cochrane. Original part of Western Canada's first major ranch. Built 1884.	On line of new highway route
Fort Fork	Peace River area. Wintering place of Alexander Mackenzie in 1791-92.	Erosion.
Fort Whoop-Up	Near Lethbridge. Major U.S. fort on Canadian soil.	Vandalism and erosion.
Heads Smashed in Buffalo Jump	West of Fort Macleod.	Vandalism.
Old Women's Buffalo Jump	West of Cayley.	Vandalism.
Writing-on-Stone	West of Milk River	Vandalism and Erosion.
Rundle Lodge	Calgary's first general hospital.	Site development.
Rocky Mountain House	Major trading post	Water erosion.
British Block cairn	Ancient native monument	Military exercises.
Sundial Hill	Near Carmangay. Ancient native marker	Vandalism
Fort Chipewyan	On Lake Athabasca	Vandalism and urban encroachment.



## 5.2 DESTROYED SITES

Fort Edmonton	Below present Legislative Buildings	Dismantled in 1915.
Fort Macleod	Mounted Police Headquarters	Ploughed over in 1969.
Ross site	Prehistoric campsite	Water erosion.
Kootenay cairn	Near Livingston Cap. Commemorative on hunting expeditions.	Road construction.
Fort Calgary	Original Mounted Police Post	Largely destroyed by railway and commercial development.
Standoff	American whiskey fort	Water erosion.
Original Dougheed House	Calgary. Built in 1883.	Torn down in 1969.

PART VI

JUSTIFICATION FOR PRESERVATION

This report can do no better than to quote in part from the Ninth Session of the General Conference of the United Nations Education, Scientific and Cultural Organization (Unesco), meeting at New Delhi.

"Being of the opinion that the surest guarantee for the preservation of monuments and works of the past rests in the respect and affection felt for them by the peoples themselves, and persuaded that such feelings may be greatly strengthened by adequate measures inspired by the wish of Member States to develop science and international relations. Convinced that the feelings aroused by the contemplation and study of works of the past do much to foster mutual understanding between nations, and that it is therefore highly desirable to secure international co-operation with regard to them and to further, in every possible way, the fulfillment of their social mission...

Considering that the history of man implies the knowledge of all different civilizations; and that it is therefore necessary, in the general interest, that all archaeological [and historical] remains be studied and, where possible, preserved and taken into safe keeping...

The General Conference recommends that Member States should... take whatever legislative or other steps may be required to give effect, within their respective territories, to the principles and norms formulated in the present recommendations."

The Unesco then outlined seven basic principles for preservation, among which were control of excavation, protection of sites and remains, retention of controls over excavated objects, and educating the general public.

PART VII

PRESENT PRESERVATION ACTIVITIES

Preservation takes two essential forms, protection and salvage. Protected sites are removed from the threat of destruction, whether by man or nature, and are maintained according to certain standards appropriate to each. Measures required to preserve a historical building or structure will differ radically from measures adopted to protect a tipi ring site. Salvaged sites are those inevitably doomed to destruction either by the forces of man or nature. In these cases, the historian or archaeologist makes every effort to compile a full record of the site before it is destroyed, so that it will still exist at least as a record. Protection is preferable to salvage, as no one is capable of recording all of the information on any site, but protection is not always possible in this age of expansion.

Protection can be offered to sites by individuals, corporations, or governmental agencies. That offered by individuals is least satisfactory, since there is not guaranty of continuity, and since individuals frequently do not have the necessary resources to curb the forces of destruction. Corporations seldom express interest in the protection of historical and archaeological sites, since it is generally not in their immediate interest to do so. Government offers the most satisfactory solution.

At the present time the Alberta Government maintains 21 marked sites, 9 unmarked sites, 3 plaques, 13 monuments and 75 highway signs, all of historical or archaeological interest. The federal government has 5 sites, 11 plaques and 23 monuments in Alberta, while private bodies maintain six restorations (most churches), 17 monuments and five historic parks.

But unlawful destruction continues even at protected sites. One reason for this is that most sites are left unguarded. Even where guards are present, such as Writing-on-Stone Provincial Park, the problems inherent in preventing vandalism seem insuperable against the determination of a few plunderers who place personal gain above the public interest. Public education may be the only answer. In short, programs for the protection of sites are not proving particularly effective. Urban, commercial, industrial and governmental projects are eating rapidly and increasingly into the limited numbers of historical and archaeological sites, and the problems of protection will become ever more acute.

Assuming that all historical and archaeological remains are endangered by vandals, commercial development, industrial expansion and other processes, then all investigations of these remains may be viewed as salvage operations. Normally, however, salvage implies that the danger of their destruction is immediate, in effect salvage is an emergency operation directed toward saving information that would soon be unobtainable. These operations contrast with "problem-oriented" research in that they are undertaken primarily for the purpose of rescuing the past while it can still be gotten, not for the purpose of finding the solution to a particular question.

Federal agencies, particularly the Archaeology Division of the National Museum of Man (now the Archaeological Survey of Canada) and the National Historic Sites Service, have provided large amounts of money to finance salvage work over the course of the past ten years. The Archaeological Survey, which is beginning to compile a computerized inventory of all known sites in Canada, directs its activities

primarily to federal lands other than parks, and historic sites, where work is sponsored by the National Historic Sites Division (in Alberta, especially in Waterton National Park). While the Archaeological Survey of Canada will therefore focus on the North, it has and will continue to support such salvage work at such places as the Suffield Experimental Station in Alberta.

Provincial institutions have developed only recently. The Glenbow Foundation in 1955 inaugurated a long-term historical and archaeological program. Its concern with history continues under the Glenbow-Alberta Institute, but in large part its archaeology program was turned over to the University of Calgary upon inception of a separate department, in 1964. Two archaeologists joined the Department of Anthropology, University of Alberta, in 1963. Higher education in western history, particularly in Alberta, is offered at the University of Alberta.

The Provincial Museum and Archives has been actively engaged in historic sites excavations, particularly at fur trading sites, and has an archaeologist on staff.

The Glenbow-Alberta Institute, the Provincial Museum and Archives, the University of Alberta, and the University of Calgary operate active programs, each according to its interest. The universities operate programs for the training of students and for research. Many sites have been investigated, and many areas examined, sometimes in connection with salvage programs. For the most part, research funds have come from private or federal sources not from the province, and they are often tied to specific projects. An overall general program for Alberta is lacking.

PART VIII

GENERAL GUIDELINES FOR FUTURE PROGRAMS

8.1 OWNERSHIP

The province can claim ultimate ownership over any historical or archaeological resources within its borders (except on federal land), and it is therefore the obligation of the province to its residents and to the world community to assure the conservation of these resources whenever necessary or desirable.

The definition of "necessary and desirable" may be determined by the Minister, who should be responsive to the recommendations of an objective Historical and Archaeological Advisory Board, which would consist of specialists in the fields of history and archaeology as well as laymen representing the general public.

8.2 METHODS OF PRESERVATION

In the choice of alternative methods of preservation, protection should normally take precedence over salvage. Salvage inevitably wipes out primary sources of information (though preserving some of the information), while protection assures the physical presence of sites themselves for the enjoyment and benefit of future generations. Whatever means of preservation, an active agency of government must be established with qualified staff and adequate funds for effective execution of a continuing program in both history and archaeology. It must be capable of dealing with the destructive effects of man and nature of historical and archaeological resources. To achieve its aims the agency should be able to enter into agreements with individuals, corporations, and other governmental agencies, both inside and outside Alberta.

With the rapid growth of urban areas, the extension of new highways, and other commercial activities, many known and unknown sites are undoubtedly in danger. An accelerated program of surveys is necessary to discover historical and archaeological sites and structures. Once this has been done, it will be possible to establish priorities and to determine which sites and structures should be saved. Such priorities should also determine which sites and structures are worthy of restoration. For some time the Federal Government has considered acquiring and restoring such sites as Old Women's Buffalo Jump, Cochrane Ranch and Rocky Mountain House. Yet, partly because of inflexible attitudes of both the Federal and Provincial Governments, particularly in the matter of mineral rights, Alberta remains the only province in Canada without a National Historic Park.

In the meantime, these sites continue to deteriorate. Other sites also are important, and priorities should be established and funds provided so that they may be preserved and restored in an orderly manner. Factors to be taken into consideration include historical or archaeological significance, accessibility, general condition, interpretative value, and cultural, recreational and educational use.

### 8.3 LEGISLATION

Legislation is essential in order to (1) assert unequivocally the right of the government to all historical and archaeological resources; (2) prevent the willful destruction of historical and archaeological resources by individuals, corporations and government agencies, without prior authorization by the Minister responsible under the legislation; (3) encourage private persons to participate in the preservation of historical and archaeological sites; (4) establish an Historical and Archaeological Advisory Board;



and (5) establish active survey agencies to preserve historical and archaeological resources, including those endangered by the forces of nature.

#### 8.4 PROTECTION

While protection may assure the continued physical presence of a site, this does not in itself assure that the site will be worthy of continued protection unless other steps are taken. If protection is intermittent, then serious damage to sites may result in their partial or total destruction at intervals. Problems associated with preservation through protection apply more to historical structures and buildings than to archaeological sites in Alberta.

#### 8.5 MAINTENANCE

Maintenance, however, is a problem common to both historical and archaeological sites. Even if buildings and sites are perfectly protected against depredations by man, they are still subject to natural forces such as erosion, weathering, decay and decomposition. Governmental agencies charged with the responsibility for conserving historical and archaeological sites should employ the services of technical specialists to fight the battles with nature.

#### 8.6 RESTORATION

Restoration of sites is from time to time desirable, provided that such restorations will enhance public understanding and knowledge of the broad patterns in history (including architecture) or archaeology; and will retain the ambient environment, the harmonious setting of sites in their original localities; and will be accurate and authentic.

#### 8.7 SALVAGE

Salvage operations may be required when historical and archaeological resources are destined to be destroyed by man or nature. In the case of human activities, destruction

is often inevitable as a result of relentless economic pressures; historical and archaeological sites must be sacrificed. So salvage operations are the last resort in an attempt to preserve the record of the past. Without them, nothing remains of this fragile and non-renewable record.

Since these sites are in effect the property of the government, and since they may be imperiled by natural forces which are beyond the control of any individual or group, it is incumbent upon the government to salvage such sites unless they can be preserved by protection. Salvage operations usually result from commercial or industrial expansion in the form of the construction of dams, highways, pipelines, and so forth. It has been amply demonstrated that historians, archaeologists and industrialists can work harmoniously in preserving information on the past while modern development continues without impediment.

Developers can destroy historical and archaeological sites that would otherwise remain undisturbed (sometimes even undetected) unless the developer had inaugurated activity. They should, therefore, bear the costs of salvaging those historical and archaeological resources. Many have recognized this responsibility, including the El Paso Natural Gas Pipeline Corporation, various highways departments, and the United States government in the huge Missouri River Basin Project -- a project which led to the construction of a number of dams which inundated many hundreds of historical and archaeological sites. The costs for salvage in all cases, was limited to a small fraction of one percent of the total budget.

In addition to providing funds, developers should also be required to provide historians and archaeologists with sufficient lead time for reconnaissance, investigations

and excavation. In this way, conflicts between construction crews and salvage teams would be minimized, and contractors would eliminate the possibility of liability for violating laws protecting historical and archaeological resources.

## 8.8 EDUCATION

The introduction of legislation is only a small part of the preservation picture. No law or regulations can halt the destructive forces of man and nature, unless the public is well informed and willing to see such preservation take place. Studies have indicated that much of the public is interested, and recent concerns for the environment have been extended to the fields of history and prehistory. Yet most people are unfamiliar with the resources of their province and are even less familiar with the ways in which they may be utilized.

The resounding success of Heritage Park in Calgary is one indication of public interest. Through a series of old and reconstructed buildings, the park has been able to recreate the atmosphere of an Alberta village in about 1910. The general public, both young and old, has flocked to this historically-oriented recreational area and has gained some knowledge of the past.

There is every reason to believe that the Fort Edmonton Park, now under construction, will have an equal appeal when it tells the story of Alberta's capital.

Pierre Berton's books The National Dream and The Last Spike have been Canadian best sellers for many months. In them, Berton has told the thrilling history of the building of the Canadian Pacific Railway.

Evidence points to the fact that the public wants to know about prehistoric man; they want to visit buffalo jumps which can be properly interpreted to them; they want to

learn about the Cochrane Ranch, about Fort Whoop-Up, and about Fort Fork, where Alexander Mackenzie wintered before completing his famous transcontinental journey in 1793. The various levels of government and the interested institutions have a responsibility to provide this information to the people of Alberta. This can be accomplished in many ways, such as through the publication of historical and archaeological reports and studies; preserving, restoring, and maintaining historical structures and sites; producing popular publications for schools and the general public; and by making use of all the modern communication media -- television, radio, movies, videotape, filmstrips, newspapers, tape recordings, etc. -- to carry a twofold message to the public. One should inform them about the history of the region, with particular emphasis on protected or restored sites; the other should be to create an awareness of Alberta's unique historical and archaeological resource in order to prevent needless vandalism and destruction.

#### 8.9 CO-ORDINATION

The Government of Alberta must have greater co-operation among its various agencies and departments if sites and structures are to be acquired and preserved. At the present time the Department of Public Works maintains Rutherford House and Government House in Edmonton and St. Charles Mission in Dunvegan. The Department of Lands and Forests, through its Provincial Parks Branch, is developing sites at Writing-on-Stone and Victoria Mission, while at the same time maintaining ownership of numerous remains of trading posts and other sites, particularly along the North Saskatchewan River. The Department of Culture, Youth and Recreation, through its Provincial Museum and Archives, conducts a joint Federal-Provincial Historic Buildings survey program, as well as establishing appropriate cairns and signs throughout the province. It also has an active

historic sites program and conducts archaeological work. Such diverse activities, without effective co-ordination, can be both wasteful and frustrating. All such activities should logically be centred under one department. In addition, there should be an active inter-departmental committee made up of responsible officers who would co-ordinate any activities which might relate to historical or archaeological sites or structures.

The Departments of Highways and Transport, Public Works, and Lands and Forests are but three examples of departments which could potentially be destroyers of sites. The Departments of the Environment, and of Culture, Youth & Recreation and the Alberta Travel Bureau could at the same time be involved with preservation. It would seem only natural that departments such as these should be involved in an interdepartmental committee which would direct the Government's activities towards attaining the greatest benefits for all. Similarly, greater co-ordination is needed among the various universities, museums and government agencies which are involved in archaeological work in Alberta. In this way, needless duplication can be avoided, and priorities set for the excavation of important or endangered sites.

#### 8.10 GENERAL

The needs for future programs may be stated in simple terms. They are to protect, preserve and restore the heritage of Alberta as reflected in its historical and archaeological remains. The specific programs will depend upon the extent of effective legislation, the availability of funds, and the degree of public support. Alberta's past is in the hands of the present generation which must decide what it intends to preserve for the future.

APPENDIX 4

LIVELIHOOD CONSERVATION AUTHORITY

1972 UNITED NATIONS CONFERENCE ON THE HUMAN ENVIRONMENT

1. Memo for Mr. Yurko.

COMMITTEE I

Re: Educational, Informational, Social and  
Cultural Aspects of Environmental Issues

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COMMITTEE ON EDUCATIONAL, INFORMATIONAL, SOCIAL  
AND CULTURAL ASPECTS OF ENVIRONMENTAL ISSUES

United Nations Conference  
on The Human Environment

Stockholm, Sweden  
June 5-16, 1972

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1.0 BRINGING THE FUTURE INTO BEING

1.1 A Unique Human Activity

A unique activity in human society is the process through which it seeks to define its future, and then bring that future into being. This dynamic orientation to the future is perhaps one of the major distinctions between the human species and others. It is the process in which individual participation has its freest play, and where the public in all its parts characteristically assumes a dominant role as society first of all attempts to foresee what its future should be and then transforms itself as that future is achieved.

1.2 The Era of the Environment

It is probable that the dominant issue determining the future of society now is environmental. The impact that man has on his environment, the constraints this places on the future of the human eco-system, and the transformation required within human society to bring about the most desirable future for the human species may be the most compelling dynamic for change in this epoch. The attempt to define the future in an objective and ideal way in terms of the most desirable global human eco-system has become a critical element in man's thinking at this point in time. The definition of objectives within this context and the elaboration of means whereby these objectives can be attained have, as historically has always been true, become an arena for wide ranging individual and public dialogue and discussion.

Society is changed both in the attempt to define and reach new goals, and by what transpires after the goals have been attained.

### 1.3 Mechanisms for Public Participation

In the process whereby society defines and achieves a desirable future for itself, it is important that mechanisms be provided that facilitate public participation in the issues under discussion, and that enable these discussions and debates to go forward on the basis of sound and sufficient information. In respect of environmental issues these mechanisms should emphasize public participation related to environmental education, the elements of environmental management, the consequences that can be foreseen on the human eco-system including economic parameters, and the restraints that society might place on its members through legislation and regulations.

### 1.4 Global Impacts

At the international level it is important that mechanisms be provided to enable international environmental impact statements to be written on environmental stresses that have international connotations. An additional element of judgment should be provided in such an international agency so that net assessments of the social and economic benefits and disbenefits of such a phenomena can be made and presented.

### 1.5 Cultural Adaptability

Human societies now exist with different social and cultural relationships to their physical environments and with quite different response, adaptation and control elements related to environmental problems in their jurisdictions. This unevenness among different social and cultural entities is expressed also in quite different capabilities to generate environmental damage as well as to initiate improved environmental practices. It may be that the cultures and societies that more greatly damage the physical environment are in some cases also those that have the more significant adaptive or control capabilities. To this extent the problem could be handled through self-disciplinary techniques. Otherwise, international cross-cultural mechanisms must be developed.

### 1.6 Social Responsibility

The social and cultural dependency of one country on another can relate

in a significant way to environmental issues. It sometimes happens that the renewable and non-renewable resources of one country are largely developed by companies from another country or by subsidiaries of international companies. Not infrequently certain cultural and social dependencies coincide with the flow of resource exploitations in such a way that the society being exploited may lack the will or the way to protect its own environment, while the country from abroad doing the development may feel little or no responsibility for careful environmental management in strange and distant areas. Responsibility for environmental management, falling between two stools, may not be taken up by anyone. Futility and frustrations may further affect the social fabric. A simple result is the appearance of a sharp cultural discontinuity as that society attempts to move from one set of survival values to a new and strange set imposed upon them or derived from external sources. The parents may no longer know their children. Examples of this phenomena can be found within a country, as well as between countries. Other social responses, more nationalistic and less permissive can also be anticipated as citizens see their country suffer.

### 1.7 A Global Human Eco-System

An important impulse in much contemporary thinking is towards a human eco-system that encompasses the globe. In physical and in basic biological terms there is much logic in this concept. The social, cultural and political implications of such a development are, however, immense. Indeed, the random distribution of disparate cultures and social systems now displayed, often arrived at independently of one another, each require and provide their own kind of process to identify and achieve their futures. Whether global human eco-systems can be achieved by these motley agglomerates of human groupings is a matter for interesting conjecture, particularly if the basic integrities of the separate systems is challenged or if the connotation of change implies that all human societies will become like each other and thus different than they have been. It may indeed then be that reluctances to change cherished social and cultural structures may become critical obstacles in the achievement of otherwise desirable global resolutions of environmental issues. Problems relating to population control or the freedom of an individual's access to the resources that surround him, or the question of property rights, are

built into different societies in different ways. Though they may need to be challenged, changes may produce unexpected results.

## 2.0 EDUCATIONAL, INFORMATIONAL, SOCIAL AND CULTURAL ASPECTS OF ENVIRONMENTAL ISSUES

### 2.1 Role and Function of Environment Conservation Authority

Heightened interest in environmental issues in Canada has resulted in innovation and experimentation by government, in order in part at least to accommodate the public interest. Unique in Canada is the Environment Conservation Authority of Alberta, formed to investigate and report to Government on environmental issues, as well as to provide a mechanism for public involvement. The Environment Conservation Authority has functions that put it into relationship with the public at large, with the departments and agencies of Government, and with the Lieutenant Governor-in-Council. It is the responsibility of the Authority to bring together these three sectors with respect to environment conservation defined to include resource management, conservation and pollution.

Under the Act which created it the Authority is to be a non-partisan body without vested interests, at one length removed from government itself. The Authority functions apart from government as a corporation receiving its appropriation directly from Executive Council of the Alberta Government. To confirm its disinterest the Authority has none of the regulatory, administrative or other routine responsibilities of a department of government.

The Authority is to conduct a continuing review of policies and programs of the government and government agencies on environmental matters. The Authority is to assist in coordinating policies and programs related to the environment within departments and agencies of government. Finally the Authority is to undertake specific inquiries and public hearings at the request of the Cabinet and report thereon to the Lieutenant Governor-in-Council. The Authority reports to the Lieutenant Governor-in-Council through the Minister of the Environment.

### 2.1.1 Relationship to the Public

The element of public access is a vital component of the Authority's functions. Experience has confirmed the importance of the public connection for the Authority to fulfill its intended role. Conversely, the Authority wishes to have access to all sectors of the public at large. As well the Authority attempts to make available and facilitate the access the public has to the Authority itself and to the information the Authority can provide.

### 2.1.2 Relationship to Department and Agencies of Government

The role and functions of the Environment Conservation Authority require it to work closely with those departments and agencies of government that have responsibilities for resource development or other matters relating to the environment. The Authority may be advised by the departments and agencies as to questions and issues that need clarification through inquiries and public hearings which the Authority may undertake. Although the Authority and the departments may frequently work together, their roles are essentially different. The Authority attempts to develop and maintain an overview of environmental affairs while the departments administrate these affairs on a day to day basis.

The Environment Conservation Authority is organized to receive inputs from government agencies and from the public at large. Outputs of the Authority in matters relating to environment are public reports and recommendations to the Cabinet of the Government of Alberta. It is important to emphasize that the Authority is not itself a regulatory body. Major activities of the Authority accent functions such as public hearings, public inquiries and petitions from the public. The Authority may be seen as a quasi-judicial, appellate, and advisory device through which public interests are blended with environmental, regulatory and legislative expertise, both within and outside government.



## 2.2 Philosophy and Practice of Public Participation

An important emphasis in environmental issues is required to maximize public participation in the formulation of policies related to natural resources and environmental management. With increases in population and a more structured society the role of the individual often has been suppressed, and that of groups has become enhanced. Public aspirations are often reflections of abstract goals such as freedom, justice and quality of life, but they do not identify functional guidelines for policy formation and implementation of programs.

Changes in public attitudes have created a strong public demand for a larger share in policy formulation. What is needed therefore are mechanisms which enable the preferences of the public at large to be identified in terms of the obvious need to channel public energy into policy formulation. This can be assisted by making available to the public as much information as possible on a subject of concern, as well as by inviting a comprehensive and wide ranging public response, based on that information. Structures and mechanisms need to be established to provide the essential link between public aspirations, policy formulation and program implementation.

In the western world, largely through the activities of individuals and associations of individuals who are deeply concerned with the environmental implications of man's way of life, a majority perhaps has now come to favour an attitude of environmental concern. A relatively small fraction of society has been able to win a broad support for a general thesis. The need for public participation will become more acute, will be required from a larger percentage of the population, and will be on a more formal basis. Sensible and practical attempts will be needed to define new environmental objectives and to reach them. For public participation to be meaningful in the formulation of public policies on environmental issues, the following guidelines are suggested.

- (1) Practical means should be available in order that individuals, groups, associations and corporations can fully develop and publicly express their points of view.
- (2) The public should be able to express its points of view on the basis of up-to-date and correct factual information.

- (3) Where public opinion is divided means should be provided to facilitate the exchange of views between opposing parties, with provisions made for the input of objective data and information.
- (4) The views that have been developed within the public area should be given access in a public way to elected representatives and Ministers of the Crown.
- (5) Any instrument or device used to bring about public participation should itself be generally non-partisan, without vested interest in the issues under discussion and at arms length from government itself. The Environment Conservation Authority of Alberta is suggested to be such an instrument.

## 2.3 The Four Ways Forward

Do not all governments and all political parties now urge the same objective, namely, the maintenance and restoration of an environment best suited to man and to other forms of life now and for the future? Indeed, do we not all quite generally agree that there is a need for the development of policies for the management of the environment, taking into account the dynamics of life, the requirements of man and the resources available, and that the time has come for a rational approach to these objectives? What now remains are the mechanics of achieving those objectives. The emphasis that is to be placed on different broad approaches, the identification of priorities, and an assessment of the interdependencies and urgencies associated with the several tasks. One general view consistent with the objectives outlined above is that environmental management, environmental education and environmental legislation with a broad and general emphasis on environmental economics including the economics of living processes, together provide the major avenues into the future.

### 2.3.1 Environmental Management

With the great increases in human population, and with the very considerable increases in resource consumption, the total impact of the human species on the biosphere is testing the capacity of the biosphere to absorb the wastes of man. At the same time, some of the ancient acts man had of

conserving his environment have been abandoned or have become impractical for an individual to implement in a highly innovated society. The great movement of people from the farm to the cities has undoubtedly enlarged the scope and concentrated the impact of environmental problems.

It is probably partly true that environmental problems have been made more acute by the quick inroads of a rapidly developing scientific technology enabled us to make into the physical resources of the world. It is hoped that this same ingenuity will help us to invent ways to manage the processes that now support us in such a way as to minimize or eliminate the undesirable side effects. There are at least two parts to this problem. One has to do with the processes themselves, and the other has to do with the people who control the processes. Both of these have strong educational as well as management components. The two together will produce the new environmental technology that will be needed if proper environmental management is to be achieved.

The addition of the techniques of environmental management will produce changes. Some of these will be new in kind, developing new technologies, some will be interdisciplinary and highly specialized in areas not yet well developed.

#### 2.3.1.1 Human Ecology and Environmental Management

Man's relations with man and with the earth's resources are changing at a pace difficult to comprehend. Powerful forces are acting concurrently in reshaping the physical and social environments. Problems and pressures arise from changes in technology, new social attitudes, and the growth of population and urbanization. One effect of these changes is to underline the interdependence of subjects that formerly were treated in a self-contained way. Another is to emphasize the fundamental importance of anticipating the after effects of present actions on life support processes, a fact vividly emphasized in a river, lake, delta and ocean systems of the world. Environmental management means preplanning and integration of cause and effect, so that unfortunate consequences on living processes can be avoided.

Our first concern must be with our own species and with its future prospect. This is human ecology. We must so consort ourselves to proper environmental management that our own species can be given assurance that its future will be healthy and secure. It is not an unnatural claim to make on one generation that it prepare and keep safe the future for the next generation and generations to come. Man has vital and direct dependencies on other animal and plant species. Consequently in a statement that ecological considerations are basic to environmental management, the further statement that human ecology tends to include within itself all living processes may only be a statement of the simple human self-interest. It is in this sense presumably, that it may be said that environmental management assumes the maintenance of the human ecosystem as its framework and responsibility.

### 2.3.2 Environmental Economics

The past has left a legacy in the form of environmental damage that has accumulated in the air, the land and water as well as in the form of capital costs of old industrial plants that no longer meet contemporary standards. The cost of this legacy is thought to be substantial throughout the world, but our concern should be more largely with the present and the future. For the present and the future, there are reasons to suspect that the cost though certainly real, may not in percentage terms be overwhelmingly large. In the first place good environmental management will prevent damages to people and property that are now borne as hidden costs and do not appear as costs in the product itself. Secondly the environmental management costs borne by industry will no doubt be passed on to the consumer where they will take their way to the market place. Third, in many cases it is to be expected that good environmental management will in fact improve returns, by reducing wastage, by increasing the range and novelty of by-products, by developing superior technologies, by improved efficiencies through suitable recycling processes, and so on. Fourth, the requirements of environmental management will create new jobs and open up new employment opportunities for the working force. In summary, it would seem that there could be economic advantages from the requirements of environmental management that should not be readily discounted.

### 2.3.3 Environmental Education

Before the need for increased environmental education in the school system was recognized, some of the more effective environmental education was done by informal educators, by associations with environmental orientations by anti-pollution groups and environmental activists, and by concerned groups and individuals. It would seem that society will need both formal and informal educators in the future.

In general, the objective of environmental education is to develop a sense of responsibility toward the whole environment whether in the town or city or in the countryside, a responsibility that extends well beyond the visual scene to all the immense complexities of life that inhabits it. A second objective is to develop a sense of trusteeship and to regard man not as an exploiter of his environment and the material resources it contains, but its guardian to protect and manage it to the best long-term advantage of all the species living in it, including man.

Programs could be developed in the public schools to help the young develop an awareness of the environment in contemporary terms, both as it applies to complex communities and to cities. These studies could be introduced into the regular curriculum in social studies and in the biological sciences. Such studies could be further developed within the regular junior high school and senior high school educational levels. There appears also the need at the post-secondary and advanced levels for people trained in new ways and with new skills, in the institutes of technology and in the universities. This would assist in meeting the highly specialized problems of environmental management and the need for teachers of environmental programs in the school system.

Adults also need to have an exposure to the new concepts of environmental management and to have an opportunity for their attitudes to the world changed and altered so that they may behave more appropriately. There is therefore a role for continuing education both under the sponsorship of institutions and outside the institutions by voluntary groups, so that all sectors of society can be reached. Finally there is a specific requirement for what might be called in-house training within industry and within

government. Employees could be given suitable instruction so that the job they undertake can be conducted in an environmentally safe way. Training programs in industry might be a useful way for introducing new techniques and controls required by new environmental management restraints upon industrial processes.

#### 2.3.4 Environmental Legislation

Much new environmental legislation has been passed in the last two years. First appearance of new legislation indicates in a democratic society that a new consensus has formed or is forming in the public mind. It is perhaps at the point of a new consensus society is now moving in respect of its relationship to the physical environment. Citizens, associations, businesses, know out of their own experience that certain rationalizations and constraints on their own behaviour and the behaviour of others as they effect the environment are needed in the best interests of all.

Legislation establishes principles, guidelines and objectives; testing is needed at each point where legislation is introduced to ensure that regulations and enforcement are practical, meet the public need and are fair.

Perhaps a word of caution is not out of place. Even if the general consensus has been reached that the environment is in danger for future generations, there has hardly yet been time for a consensus to form as to how critical the situation is, or more precisely what steps are needed for the future and what are the priorities for action.

#### 2.4 Social and Cultural Aspects of Archaeological and Historical Resources

The cultural heritage of any society should be considered one of its most valued and important assets. The people have an interest in the preservation of all antiquities for there scientific and historical information and value. These should include but not be limited to historic and prehistoric ruins, sites, structures and objects. The neglect, desecration and destruction of these places and objects results in an irreparable loss to the public. For any society, knowledge of its antecedents is important in deciding the direction of its future.



The welfare of a people is dependent upon a beneficial environment, and the preservation of the historical and archaeological heritage is an intrinsic element in such an environment. In addition, the understanding and appreciation of the cultures of different peoples who lived or have lived in an area now occupied by another society, will be heightened and enriched by the preservation of cultural properties associated with each of these peoples.

The needs for future programs may be stated in simple terms. They are to protect, preserve and restore the heritage of the past, as reflected in historical and archaeological remains. The specific programs will depend on the extent of effective legislation, availability of funds, and the degree of public support. Society's past is in the hands of the present generation which must decide what it intends to preserve for the future.

## 2.5 Social and Cultural Aspects of Environmental Education

There seems to be a public consensus which endorses the principle that the long term investment in environmental education will pay valuable dividends at a time in the future when society will be faced with important choice of action on environmental matters, and at a time when a magnitude of problems likely will be much greater than at present. An environmentally educated public will have less difficulty in selecting alternatives than one which was environmentally less aware of fundamental causes of environmental degradation. In addition, matters of urgency face us now with respect to environmental issues, for which shorter range solutions must be found. In this area also an environmentally aware public is of utmost importance. This awareness can only be created through the various aspects of the educational process.

All environmental problems are related ultimately to demands by human populations on resources which support the growth and maintenance of society. The problems are inherent in the demands of human population for survival must be exposed through the educational process. Issues in population growth and control, as well as resource management are likely to be controversial in many countries but cannot and should not be avoided.



Such issues are of high current interest in most western societies, and seem to strike a responsive cord in young people when exposed in the classroom. These questions appear to have great relevance in the educational system, to the personal needs and understanding of social problems by students.

The first and highest long range priority in environmental education appears to be in the elementary schools where initial attitudes are developed, within continuing increased emphasis at the junior and senior high school level. Of importance also is the role of the technical institutes and community colleges. These institutions can make an important contribution, not only in scientific technologies required by governments and industries, but also in the field of continuing adult education for citizens within environmental concerns. Finally, it should not be forgotten that there is importance in the informal educational role of parks, museums, zoos, and related areas outside the formal classroom approach. Further development of the role of informal education is important, as is its relations with the formalized educational system.

### 3.0 COMMENTS ON THE CONFIDENTIAL ADVANCE COPY ON EDUCATIONAL, INFORMATIONAL, SOCIAL AND CULTURAL ASPECTS OF ENVIRONMENTAL ISSUES.

#### 3.1 Summary of the Confidential Advance Copy

The need for action is becoming apparent in the actual visible degradation of our environment. The so-called developed countries have in the past measured progress in terms of economics. We are now becoming aware of the problems created by this system and now feel that it is time to adjust our attitudes. Problems are evident in the ecological crisis, the deterioration in the quality of life, the impact that advanced societies have on other less developed societies and any lack of concern for the future exhibited by many nations. The roots of the crisis lie in the worship of science and technology as the salvation for mankind, wherein little attention is paid to the effect of scientific advancements on the environment, in the economic system which has been practiced and which advocates growth simply for the sake of growth, and which generally pays attention only to short-term development, and in the political actions of nations wherein they tend to serve only their self interests. The basis for action lies in the growing awareness by individuals of the problems and complexity of the future; this tends to cause increased anxiety about situations which are not fully understood.

The objectives of action will be to maintain and restore the biosphere, to improve the quality of life by educating people in their interaction with the environment and awakening them to the consequences of their action, and to retain continuity with the cultural and social aspects of our past.

Action can be taken on the educational aspects by incorporating in our educational system an appreciation of environmental ethics and by training competent multi-disciplinary decision-makers. Information should be made freely available on an international scale and every attempt should be made by the developed nations to provide as much expertise and knowledge to the emerging nations as is possible. Governments should ensure that the environment is protected in their own countries while at the same time they should cooperate at an international level in preventing pollution which affects several states. The State will play a leading role in environmental action in the future and it will be necessary for politicians to be among those most cognizant of environmental ethics.

The recommendations for action are: countries should prepare a national report on the state of and outlook for the environment on a national basis; on an international basis countries should exchange this information and personnel. Educational action would require that countries incorporate into their educational systems environmental programs; on the international level the U.N. could act as a general worldwide educational device. An effort must be made on the part of the countries and the U.N. in ensuring as much public participation in decision-making and in the transferral of information. The heritage of nations must be protected and indeed changes must come about in new approaches to tourism, to creation of urban centres, and other aspects which will enhance the quality of life. Exchange of information will become even more important in the future; national action should be taken on developing and strengthening information networks, while the U.N. should set up an international referral service.

### 3.2 Comments on the Document

It is important to note that a very great difference can exist between the problems of developed and underdeveloped countries. Sanitation and health may be a major necessity in underdeveloped areas whereas air pollution may be a problem in a developed nation. If we are to benefit in any way the emerging nations, then we must determine what their priorities are and realize that our ideas will not always be applicable to them. Furthermore, we should realize that the problems as we see them may not be viewed in the same light by underdeveloped nations; this also occurs within different segments of our society in our own country - the person who is in poverty doesn't look at air pollution as an important problem to him, what he wants is food to survive. As long as we continue our present economic course of action the underdeveloped countries will aspire to the same life-style and continue to sell and exploit their lands. The developed countries have the power at present to continue deterioration of the environment while the underdeveloped countries don't, therefore, it will be up to us to provide a habitable world in the future.

It is all very well to talk in a philosophical manner as in this document and others provided for the U.N. conference. Until we are able to prevent discrimination, wars, other inequities and malaises of man, the environment will continue to suffer. There is a vast difference between rhetoric

and action. There will always be a trade-off between the environment and political or economic steps, this will be due to the attitudes of people and may never change. In this respect it will be necessary to ensure that environmental activities are always pursued with as much help from government as possible. Our education should be directed to changing the attitudes of the consumer from that of one way environmentally unsound practices to a closed cycle system.

### 3.2.1 The Need for Action - Chapter I

Paragraph 6 is very important. Developed nations are totally dependent on consumption of natural resources; how can we continue to increase our use of them while at the same time estimating limits as to their availability? What protection are we providing for the future? It should be noted that it is the developed countries in the main who are exploiting and destroying on a large scale. Overpopulated countries may do so by sheer numbers, but the majority of mankind does not at the present time. As the disparity between the haves and have-nots is increasing, this will cause the have-nots to become more hostile in the future and may lead to international friction. Also, in their quest to increase their standard of living, the underdeveloped countries will sell out resources and accept many industries which will exploit or pollute the environment. They will therefore not have these resources in the future. How will we then be viewed by future descendants?

The deterioration of human settlements, mentioned in Paragraph 17, will become more prevalent in the future as more countries see an increase in disparity between the city and country. The larger the cities become, the greater the decrease in quality of living. While people may flock to the city and become slightly better off than they were in the country the total city itself will not benefit. Therefore we must find new ways to build smaller and more livable cities while yet making the large ones more habitable. If there is to be any real progress made then it will be imperative that the world community adopt a population policy.

The major impact on social and cultural aspects will in the future depend almost entirely on what the developed countries do. The underdeveloped countries will not have the capabilities to effect any major changes.

The social and cultural roots of the crisis are discussed in Paragraphs

34 to 51. Paragraphs 34 to 43 are important in singling out science and technology as being entities unto themselves, pursued for their ends and not attending to their consequences. Paragraphs 44 to 46 indicate how the pursuit of economic results has neglected the environment. As a result there are no viable alternatives available to developing countries since we have always taken the same course. Paragraphs 47 to 50 put the onus on the politicians. Nowhere yet do we see politicians of influence exhorting industry or public to constrain themselves. Those in charge of extractive industries, etc., do not advance new ideas; they apply the past practice of increasing consumption.

### 3.2.2 The Objectives of Action - Chapter II

The object must be to instill in technological man a greater appreciation for his capability of creating disaster. To improve the quality of life of underdeveloped nations and underprivileged persons will require considerable constraint and charity on the part of technologically advanced societies. There is still no evidence on a national or international scale where any country has adopted practices which may be environmentally sound but which may be at present economically unsound. Although they would have a negative economic effect in the short run they would be of positive value in the long run. We must realize that we have a responsibility to future generations that we do not appear to be exercising.

### 3.2.3 The Means of Taking Action - Chapter III

In the developed countries knowledge and information is available on ways of taking action and there may be many suggestions or programs already developed. Can it be said though, that industry and governmental concerns are willing to act? Much of the action is being taken by environmental and other groups of volunteers. They have a special role to play because they do not have a loyalty to any particular party. While their actions may appear extreme in some instances, and indeed may even be detrimental, they are advancing a new way of thinking. If it were not for people and groups of this nature we may not have been made aware of the present situation. These groups take to task both government and industry and in many instances have been instrumental in these concerns adopting sound environmental practices. Environmental groups should be funded more, allowed to maintain their independence in spite of this funding, and they should be given wider scope. This is one form

of public participation that is becoming so important in protecting the environment.

### 3.2.4 Recommendations - Chapter IV

Those recommendations embodied in the paper appear to be sound and forward. Of particular interest is Section D, Paragraphs 121 to 126: not only must we consider what we have now but also we must adopt new ideas to enhance our interaction with the environment.

#### Education and Information

If the environment is to be maintained in a suitable state then the attempts of education should be to develop a harmonious interaction with and an appreciation of the natural world. States must make available all information concerning our environment - this in itself provides an educational tool; the educational system of environmental teaching should be all encompassing, teaching not only man's interaction with nature but also his interaction with himself.

Consumerism is the basis of our present society. No matter how the educational system is structured it will only affect a fraction of the total population, the remainder will continue to function in the same manner as society has in the past. It will therefore be necessary for governments to ensure that industry and corporations do not advance this consumerism attitude; durability and longevity of our artifacts must become important.

Education does not end with formal schooling and this must be recognized as such by government and industry. The exchange of personnel and the allowed change of areas of employment of individuals will serve to provide multi-disciplinary educated people capable of observing problems in a broader context.

#### Society and Culture

We have developed the idea that we are "civilized" and that backward nations are "savage"; in our interaction with them we wish to impose our standards and "civilize" them. In reality they are a part of the wide social and cultural spectrum of mankind and their existence is no less important than ours. The consequences of our interactions must be carefully weighed, and if necessary, we should cease any interaction in order to preserve their existence. Canada has here a very good example in the case of white man's devastation of the Indian and Eskimo culture; this is not something we can be proud of.

Preservation of culture and heritage must play an important role in the future. The development of modern society takes very little into account other than its own self interest for the present: there is very little planning for the long term future.



APPENDIX 5

ENVIRONMENT CONSERVATION AUTHORITY

1972 UNITED NATIONS CONFERENCE ON THE HUMAN ENVIRONMENT

2. Memo for Mr. Yurko.

COMMITTEE I

Re: Planning and Management of Human Settlements  
for Environmental Quality

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## 1.0 PLANNING AND MANAGEMENT OF HUMAN SETTLEMENTS FOR ENVIRONMENTAL QUALITY

### 1.1 Introduction

A characteristic result of industrial technology has been to place an additional emphasis on what seems to be the natural gregariousness of people. The cities have become bigger and more densely packed. The countryside has become ever more sparsely populated. The result has been the concentration of the overwhelming majority of our population into a small number of highly congested areas separated by great expanses in which hardly anyone lives at all. The intervening areas with little or no population may be under cultivation in part or in whole as in the prairies, or they may be almost untouched by man as in the Arctic and in the Laurentian Shield country of Canada or in the deserts of the mid and southwest United States, in Africa, and so on.

The simplest consequence of this remarkable behaviour is for man to very sharply overstress his environment in the areas of high population density and very substantially underuse the environment in the areas of sparse or near zero population. Even though the overall population is increasing, the population density is increasing only in the areas of very high population density whereas by contrast it is decreasing in most of the areas of low population density, such as the farming lands, etc. Even though people continue to pile up in the cities leaving the countryside behind, it is still an oversimplification to say all our human environmental problems can be handled by properly managing our cities. The cities are, however, where the major problems lie. They in turn have or are creating satellites to serve their needs, such as specialized resource based communities of perhaps finite life, or communities in selected areas that can provide unique recreational or other facilities.

### 1.2 Different Settlement Types

Human settlements of four sharply different types exist in Alberta that are of general interest in respect of planning and management for environmental quality. These are:

- [1] Rural resettlement areas.
- [2] Sub-Arctic resource-based growth centres.

[3] Concentrated and quickly growing metropolitan areas.

[4] Urban service centres for mass recreation and tourism.

### 1.3 Some Parameters for Environmental Quality in Human Settlements

[1] Planning and management.

[2] Population participation.

[3] Minimum and maximum calculations for optimum economic, cultural and environmental viability.

[4] Permanence of site occupation.

[5] The resource space.

[6] Population density.

### 2.0 Implications With Regard to the Alberta Scene

Settlements in Alberta represent the broad range of size and environmental quality indicative of most developed countries of the world. As a relatively young province Alberta has had little historical precedence or administrative experience to draw upon in coping with dramatic increases in urbanization and the resulting planning difficulties. Likewise the social problems associated with decreasing rural populations are particularly acute in a province which, only a few years ago, had a pastoral based economy.

Most of Alberta settlements owe their existence to either agriculture or the exploitation of natural resources. The resource base shows signs of weakening and Alberta will have to develop imaginative administrative and planning procedures to shift the economy to service and manufacturing fields in a relatively short period of time.

Perhaps because of the lack of historical precedence and long-established procedures Alberta has shown leadership in bold, innovative approaches to environmental management. With relatively young cities and a low population density Alberta is in a unique position to establish and implement guidelines for future growth and development as a model for others to follow.

### 2.1 Northern Settlements

The capital city of Alberta is the most northern metropolis in North America, yet in terms of potential northern development it can be considered as a southern city. There can be no doubt that major population centres will develop in the sub-arctic as well as arctic regions of Canada. These

centres will likely have resource-based economies and will grow and diversify in somewhat the same manner as southern cities. However, the harsher climate and more sensitive environment will make preliminary planning imperative.

The utilization of northern resources will likely lead to the development of settlements in the northern extremity of Alberta. The province endorses the necessity for research in planning and environmental studies and could view its future northern developments as preliminary experiments in optimizing the quality of life and minimizing the environmental disturbance. Implicit in this proposal are the benefits to be derived from a dissemination of information; this is particularly applicable to northern settlements where there is a dearth of reliable information. Governments can indirectly spur industrial research into environmental problems by establishing minimum standards which must be adhered to in the development of company towns, industrial complexes and construction camps.

## 2.2 Urbanization

Like most developed areas of the world, the major population centres in Alberta suffer from the "growth syndrome". Government administrators and planners have not effectively dealt with this problem of optimum size. Given that such an optimum size can be determined it is imperative to start planning on that basis as quickly as possible. Alberta has the advantage of experience by older cities. Although the lessons to be learned vary according to the circumstances, one paramount point emerges; it is less costly socially, economically and environmentally to follow a plan for future development than to rectify the mistakes of an unplanned past.

This Province faces a more difficult task in educating the public about the disadvantages resulting from unlimited growth than older parts of the world. This is the result of a young history; it is difficult for citizens to be concerned about slum housing, inadequate services and debilitating environments when their cities are not old enough for these problems to have arisen. By the same token, it is difficult to initiate steps to avoid these problems. Public awareness and involvement in the planning process assume prime importance in future urban developments.

## 2.3 Rural Decay

The reciprocal of the urbanization problem is the decline of popula-

tions in rural communities and the consequent deterioration in services, employment opportunities, recreation and social satisfaction. Recent programs conducted in Alberta have revealed that this rural decay is the major concern of the populace outside of metro growth areas.

This is a problem which public awareness and education alone will not solve. Administrative authorities must manipulate the employment base to provide rural people with an acceptable source of income. In so doing, of course, this action would slow down the migration to the cities. Although the concept of "growth poles" suggested in the report may serve to counteract urbanization over the long term, it may be necessary to take more direct measures. It is perhaps economically more viable to directly subsidize rural incomes and keep the small communities together than to provide ever-increasing grants to bankrupt cities? These and similar questions must be considered in developing short term pressures while more comprehensive plans can be formulated and implemented.

In any rural rehabilitation program recreation and social amenities must play a dominant role since there is evidence to indicate that younger people immigrate to large centers in search of social satisfaction as much as employment.

## 2.4 Transient Population Communities

The more affluent countries of the world, including Canada, are witnessing the appearance of special purpose communities which experience marked fluctuations in population. Particularly in temperate regions many settlements have developed historically as summer or winter recreation areas. As such they are subject to overcrowded conditions for relatively short periods of time and only a nominal population at other times.

As citizens improve their standards of living and demand more leisure time these problems will become more acute. For example, it is difficult to involve the public in the planning of these communities since they don't identify with the area. Traditionally public participation has been replaced by public reaction. Also in these communities economic development is subject to fluctuations as a result of the changing supply of money in circulation. Furthermore, nearby more stable communities may suffer economically and resent the mass public intrusion into their areas.

Problems of a similar nature are emerging in some Alberta communities, particularly those in close proximity to national parks, and planners are at a loss to deal with them. Tourism is a rapidly growing source of income for the Province and these problems must be placed high on the list of priorities in future planning for some settlements.

## 2.5 Public Participation

Alberta has been playing a lead role in the development of procedures which give the public the opportunity to become involved in the management and planning of their environment. It has become obvious that public participation at the individual level is not a simple matter. The prime requisite is an informed public; without knowledge and information in a given area it is unfair to expect a rational response from the populace. However, techniques developed in Alberta have shown that an informed public can have a valuable input into the management of their environment. Politicians, administrators and planners would be wise to recognize this potential.



ENVIRONMENT CONSERVATION AUTHORITY

MEMORANDUM

FROM:

DR. W. R. TROST,  
Chairman,  
Environment Conservation Authority.

TO:

DATE: March 17, 1972.

HONOURABLE W. J. YURKO,  
Minister,  
Department of the Environment.

Re: Hearings on Village Lake Louise

You had asked members of the Authority to attend the hearings on Village Lake Louise.

Because of (1) the nature of the public concern, including a wish for a statement from the Province; (2) the direct impact of the proposal on developments in the Province like the tourist industry; (3) the presence of on-going and projected plans by the Province for areas adjacent to the national parks, the Authority suggests that the Government of Alberta request the Government of Canada to delay implementation of the Village Lake Louise Plan until the Canmore Corridor Hearings have been held, and until the Foothills Resource Allocation Study has proceeded to the point where integrated recommendations are possible in the Canmore-Banff-Lake Louise area.

This is a summary of the attached memo reporting on the attendance of the Authority at the Hearings on Village Lake Louise.

DR. W. R. TROST,  
Chairman.

Atts.

cc: Hon. E. P. Lougheed.

WRT/jm

## ENVIRONMENT CONSERVATION AUTHORITY

### MEMORANDUM

FROM:

DR. W. R. TROST,  
Chairman,  
Environment Conservation Authority.

TO:

DATE: March 17, 1972.

HONOURABLE W. J. YURKO,  
Minister,  
Department of the Environment.

Re: Hearings on the Village Lake Louise Proposal

Members of the Authority, at your request, attended the Village Lake Louise Hearings at Calgary. Previous to that members of the Authority had also attended a public hearing held in Edmonton on the Lake Louise Proposal.

The following comments are advanced to indicate the many ways in which the hearings bore on matters of interest to the Government of Alberta. It might be mentioned that Authority members had been approached frequently by persons with inquiries as to the position which might be taken by the Government. Accordingly certain suggestions are put forth to indicate alternatives available to the Government of Alberta.

Hearings at Edmonton

Slightly over 600 persons attended a meeting in Edmonton on the Village Lake Louise Proposal on March 1, 1972. This meeting was jointly sponsored by the National and Provincial Parks Association, the Committee for an Independent Canada, the Canadian Society of Wildlife and Fishery Biologists and the Alberta Fish and Game Association. The sponsoring associations had taken official stands in opposition to the Village Lake Louise Proposal in the form in which it was presented, and the general tenor of the submissions made at the Edmonton Hearings reflected the positions of the sponsoring bodies.

The Calgary Hearings

Two days (March 9 and 10) were spent at the public hearing in Calgary, held by the Department of Indian Affairs and Northern Development. At the Calgary Hearing over 160 persons indicated their intention to present briefs in person, and several hundred more their intention to submit briefs in written form only. Summarizing comments on the hearings by Dr. Smith are attached. One submission was a public opinion sample of users of the park and of Calgary residents on the subject of the hearing.

Hon. W. J. Yurko.

March 16, 1972.

This poll indicated that while only a modest majority of the general public (about 60%) opposed the Lake Louise Proposal, almost half of these opposed it very strongly. Considerable support for developments adjacent to but outside the park was shown. A Canada-wide opinion poll was not taken, though its results might well be different and have relevance.

It would appear that the weight of public opinion might support a modified plan, but not the plan as presently proposed. If the Government of Alberta intends to take a public position on the Village Lake Louise proposed development, the following points might be considered:

- (1) A majority (56%) of submissions made to the public hearings are opposed to the implementation of the Village Lake Louise Plan as presented because
  - (a) it is alleged to be in conflict with national park policy, purpose and legislation;
  - (b) it proposes development of a facility with private capital, with an element of foreign ownership;
  - (c) the plan is designed to provide amenities common to high density urban centres, rather than those which most Canadians need in a park environment.
- (2) A substantial proportion (44%) of submissions to the public hearings support the proposal, on occasion with reservations, because:
  - (a) more facilities are needed to accommodate summer tourists and winter skiers;
  - (b) facilities at or near Lake Louise are not presently of good quality;
  - (c) Banff National Park has the best skiing conditions in Canada which should be developed and used more fully.
- (3) The Province of Alberta should be cognizant of the relative economic advantage of having substantial new capital developments in Banff National Park, as compared to the alternative of similar development in the Canmore Corridor. Summarizing comments on this aspect from the Science Advisory Committee of the Authority are attached. These comments show concern about the possibility that development of the Village Lake Louise complex would deter other developments for recreational purposes out of the parks in the Province of Alberta. The Committee indicates its view that an economic disadvantage to the Province might accrue, in addition to the fact that such a development outside the park could be more comprehensive, more useful and fully under provincial control.

Hon. W. J. Yurko.

March 17, 1972.

- (4) Planning of development in Banff National Park cannot be done properly without recognition of planning in the Canmore Corridor.
- (5) The public of Alberta appears to be anxious that its Government issue a statement with a recognized position on the Village Lake Louise Proposal.

Broadly, three alternatives present themselves to the Government with respect to public reaction to the Village Lake Louise Proposal. First, the Government can support the proposal without reservation. Second, the Government could indicate that it does not support the proposal in any form. Third, a qualified position could be taken with respect to the proposal as it was outlined at the Public Hearing in Calgary. It might be borne in mind that the Chairman of the Hearings indicated that it would be many months before any report from the Hearings would be prepared.

It is suggested that the Government of Alberta request the Government of Canada to delay implementation of the Village Lake Louise Plan until the Canmore Corridor Hearings have been held, and until the Foothills Resource Allocation Study has proceeded to the point where integrated recommendations are possible in the Canmore-Banff-Lake Louise area.

DR. W. R. TROST,  
Chairman.

WRT/jm

Atts: Comments on Hearing by Dr. Smith  
Comments from the Scientific Advisory Committee.

cc: Hon. E. P. Lougheed.

COMMENTS ON VILLAGE LAKE LOUISE PUBLIC HEARING

Calgary, March 9-10, 1972.

DR. STUART B. SMITH

The following comments are offered as an impression of the input to the Village Lake Louise Hearings. These comments are not intended as a definitive summary of the briefs, but as an attempt to approximate the general feeling at the hearings from the briefs presented on the first two days.

There obviously is a very strong public interest in the Village Lake Louise proposal, as evidenced by the large number of people (estimated at about 800 by the Calgary Fire Marshalls) who were present for the opening session. Facilities were hopelessly inadequate to handle the crowd, and several hundred people were turned away by the Fire Marshalls, because of the possible danger of overcrowding in the hearing room and the exits from it.

Of the 89 briefs presented during the session attended, 50 were opposed to the Village Lake Louise Plan without qualification. Of the 39 briefs supporting the proposal, 28 suggested alterations of one kind or another. As far as could be determined only 13 briefs of the 89 were in favour of the proposal without qualification. It was evident that the hearings resulted in polarizing the opinions of those making inputs, in that moderation was difficult, because various people early in the hearings adopted extremely strong postures. Thus, those who were against the plan as proposed, might have been willing to accept a modified plan,

and some of those indicating their support for the plan might have reached a similar position. However, the feeling was very strong for most people presenting briefs, with the result that the hearing could be interpreted as about a five to four ratio against the plan as exposed to the public.

Concerns commonly expressed by those opposed to the plan involved the contention that national parks policy and legislation were both in conflict with the objectives of the Village Lake Louise proposal as outlined. These objectives were stated to involve catering to the "jet set" international skiers in winter, and similar people travelling in the summer, to the virtual exclusion of the average Canadian and his family. A substantial number of those opposed also expressed very sharp concern over ecological implications, including environmental damage from surface runoff, sewage disposal, damage to or elimination of native plants, reduction in number or elimination of native animals such as grizzly bears and black bears.

Several briefs argued that the proposal was uneconomic for Canada and Alberta. One of the frequent criticisms heard at the hearings was involved with the foreign ownership issue, because of the involvement of Imperial Oil. Many of the opponents of the proposal expressed their greatest dissatisfaction with the intrusion of discotheques, night clubs, high rise accommodation and as they thought, expensive condominiums. Over and over again, the opponents of the proposal stressed that the National Parks were not intended to be developed as a "Las Vegas Strip".

Of those generally in favour of the development at Lake Louise the most frequent expression of opinion seemed to be centered on the very urgent need for more accommodation near or at the Lake Louise Junction.

It was pointed out by these people that on the week-ends, both in summer and in winter, it was almost impossible to get a good accomodation at Lake Louise, as well as the fact that restaurant services and other services were extremely poor. A large proportion also of those in favour of the proposal indicated that they were skiers who required accomodation at Lake Louise in order to make available the only really good ski area for their family in the Province of Alberta. Not too many arguments of substance could be identified in the briefs submitted by those in favour of the proposal, other than the urgent need for additional accomodation. Rather, the proponents seemed to zero in on the opponents as being disoriented from the obvious facts in the case as they saw it, as well as attempting to negate the argument about ecological concerns.

It is important to deal at some length about ecological relationships as presented at the public hearing. The National and Provincial Parks Association, the Canadian Society of Wildlife and Fishery Biologists, the Alberta Fish and Game Association and the Committee for an Independent Canada appeared to be the chief opponents of the proposal who had well constructed briefs. In addition, there was one brief presented by the Canadian Environmental Law Association which did not deal with the ecological implications, economics or any other contentious issue, but rather dealt with the law as laid out in the National Parks Act and regulations.

The National and Provincial Parks Association, the Canadian Society of Wildlife and Fishery Biologists and the Alberta Fish and Game Associa-



tion indicated very strong concerns over damage which might occur because of the extremely concentrated use of the area if the development were to proceed. General disruption of the area, trampling of plant life, effects of impacted snow on the ski slopes, interference with species such as grizzly and black bear as well as larger mammals, and in particular, the effect on the general look of the area with high use were the major concerns expressed.

An important presentation was made by Dr. Ian McTaggart-Cowan, a well known Canadian Biologist from the University of British Columbia. Dr. Cowan had been retained by the developers to concern himself with the ecological implications of the development.

Dr. Cowan pointed out that the fundamental question to consider was the relationship between use following development and the ecosystem in which the development was situated. It was pointed out by Dr. Cowan that there was not very much of the "natural" left in the area. It is a fact that a railway and road already exist and that if the development were to be handled properly, much of the landscape could be reclaimed by planting various species. According to Dr. Cowan, the area is not important for large wild animals, but is important for a wide variety of small mammals and birds which are native to the area. A cautionary note was introduced by Dr. Cowan concerning the necessity for preserving the native biota, and to pay particular attention to features such as Pipestone Canyon, which is subject to erosion. He pointed out that the upper village area in the proposal would be located on land very difficult to revegetate.

It was particularly stressed by Dr. Cowan that very little information is available on the ecological implications of the proposal, because data have not been gathered. He further pointed out that he had recommended for several years that these data be obtained before any consideration of development proceeded too far. Of particular concern was the disposal of garbage, sewage and surface runoff from parking lots and other areas which might contain oil and greases from automobiles. Of concern also would be the necessity for phosphate and nitrate removal from sewage effluent. Dr. Cowan made a strong recommendation that native vegetation be used entirely and that exotic plants not be imported to the area for landscape architecture. The difficulties which might be expected from grizzly bears which learn to eat garbage was also a significant point in Dr. Cowan's presentation.

As a general conclusion Dr. Cowan strongly emphasized that considerably extended ecological studies are required, and should be done before development proceeded.

Of those who adopted a somewhat moderate view, but who expressed reservations about the proposal, the point was frequently made that the development would not be economically advantageous to the Province of Alberta. It was pointed out in several briefs that there is a variety of interest for many Canadians in National Parks, and that the development as proposed catered to a rather narrow range of interest (skiing, summer tourist visitations) than those that should be accommodated in a Canadian National Park. It was mentioned by several people that a large capital

cost subsidy was implicit in the proposal, in that services such as schools, roads, skiing areas, sewage disposal systems, water supply systems etc., already were, or would be paid for by the Canadian Government. A frequently expressed opinion suggested that visitor services were necessary in the Lake Louise area, but that these should be designed as a redevelopment of what now looks like a blighted area but on a scale down version.

In summary, it is suggested that elimination of the night clubs, discotheques, gourmet restaurants, and similar facilities associated with high density urban areas, would satisfy a number of people who are against the proposal in its present form. The moderate position seems to be that something has to be done at the Lake Louise Junction, but in its present form it is unacceptable to a majority of Albertans. It is further suggested that the Alberta public would wish its Government to make a position statement available publicly. A middle-of-the-road approach would seem to be the most acceptable.



March 7, 1972

Dr. Walter R. Trost, Chairman  
Environment Conservation Authority  
9912 - 107 Street  
Edmonton 14, Alberta

Dear Dr. Trost:

Enclosed with this letter are comments from the Scientific Advisory Council for the Environment Conservation Authority on some of the consequences of the proposed Lake Louise development for the Province of Alberta.

As you will see from these comments we are particularly concerned about the possibility that development of the Village Lake Louise complex would deter other developments for recreational purposes out of the parks in the Province of Alberta. We believe that there will be an economic disadvantage to the province in addition to the fact that this development outside the park could be more comprehensive, more useful and fully under provincial control.

We are asking you to transmit these comments to Mr. Yurko, Minister of the Environment and through him to the Lieutenant Governor in Council. We would also like to request that with his agreement they be made public. Would you kindly let me know when these comments have been transmitted to Mr. Yurko.

Yours sincerely,

A handwritten signature in cursive script that reads "E. E. Daniel".

E. E. Daniel, Ph.D., Coordinator  
Scientific Advisory Council of the  
Environment Conservation Authority  
c/o Department of Pharmacology

EED:mmz

COMMENTS FROM THE SCIENTIFIC ADVISORY COMMITTEE  
FOR THE ENVIRONMENT CONSERVATION AUTHORITY

SOME ECONOMIC AND SOCIAL INFLUENCES OF THE PROPOSED LAKE LOUISE DEVELOPMENT  
ON THE PROVINCE OF ALBERTA

With the proposal to build a thirty million dollar recreational complex at Lake Louise, the federal government and its proposed lessee, Village Lake Louise Limited, are considering a significant new type of development. The "Visitor Service Centre" proposed for Lake Louise would provide for 3,700 staff and dependents (approximately the number of permanent residents in Banff), plus approximately 8,500 to 12,000 visitors during peak periods. Because of the proposed scale of this development certain influences on the province of Alberta can be isolated.

Direct Economic Costs to the Provincial Government

Alberta will incur certain direct economic costs such as access road construction and maintenance, medical and policing services, telephone linkages, etc. regardless of whether the development is located at Lake Louise or similar development is located within the province, outside the Park.

Were the ski development sited within the province of Alberta, outside the National Park, the province would have greater cost with regard to paving and maintaining road access as well as normal townsite maintenance cost. However, the probability of paying for these costs via taxation and licencing is greatly enhanced if the development is located outside of an area under federal government control. For example, with a provincial location significant revenues would accrue directly to the province in form of royalties, licences, etc. In this instance, unlike a national park location, the bulk of taxes etc. generated by the spending would go to the province. Moreover, the province would have direct control on the development.

Balance Between Direct Economic Costs: Benefits to the Province

It is not possible to estimate a cost/revenue ratio at this time since the values of the costs and revenue variable are unknown. However, it is entirely possible that the relationships between the costs and revenues

outlined above would imply that the taxpayers of Alberta will be partially subsidizing the development.

#### Indirect Economic Costs and Benefits to Province

Facility oriented recreation and tourism are industries having large economic and employment multipliers. The overnight visitor to staff ratio of about 4:3 indicates the extent of potential direct employment. As mentioned the development will have at least 3,700 staff when completed.

In addition, significant secondary and tertiary employment will be generated as a result of increased spending on Alberta goods and services by the development and by those who use its facilities. However, these benefits obtain for the development independent of its location and no doubt would give more revenue to the province should such a development be located in Alberta.

#### Tourist Centres Within the Province

Tourist centres could be located in provincial areas outside of the park but be aimed at serving areas such as Lake Louise. Canmore and Nordegg on the David Thompson Highway near the park could be mentioned in this context. These areas could also serve as summer resort centres as well as spring and fall convention centres, all of this in a manner totally consistent with National Park Policy.

Given current estimates of the demand for this type of facility, development at Lake Louise within the park would both suppress and delay similar development on provincial lands outside the park. This is a development option which the provincial government may wish to retain in order to effectively control and promote the future of this sector of economic development in Alberta; such opportunity would be lost to the province for many years if the development takes place at Lake Louise. This is a loss of major economic opportunity and of an important instrument for provincial development policy.

#### Social Costs and Benefits

In addition to economic costs and benefits there are of course social costs and benefits which must be taken into account. Unfortunately, no adequate study of the ecological impact of this development has been

presented and probably never was made. There may well be certain disamenities (i.e. social costs) associated with a development of this magnitude inside of a national park. For example, Banff National Park contains over 3,000 square miles, an area large enough to preserve grizzly bear and wolf populations; but only if major development does not impact on these species. These and other animals and plants, and their associated environment are a major resource to the people of Alberta and all Canadians. Outside the parks within the province, these and other species must be controlled and in many cases eliminated because of conflict with human economic activity. The Village Lake Louise Development within Banff National Park is of such a magnitude that it might cause a further retreat of the grizzly bear and lessen chances of re-introducing wolves in this and adjacent areas. In our mind, these would be very important social costs. As well, the development at Lake Louise, with its sphere of human impact during the summer, will significantly alter the natural environment, thus taking an important amenity (social benefit) away from Albertans and other Canadians. The same scale of development located at a suitable site outside of Banff Park would increase the diversity and options available to all persons and greatly lessen the social costs discussed above.

There are other social cost elements that can easily be isolated. These will include impact on water quality of the Bow River from sewage generated by the Lake Louise development, location of gravel borrow pits within the National Park, damage to alpine meadows from excessive trampling, etc. These disamenities are common to any development but are amplified in the context of a national park. This is then in reality a loss of diversity and heritage and will be a social cost shared by all Canadians. To justify this loss we should be able to attribute unique benefits to development situated at Lake Louise. What such benefits will accrue? Would it provide better access to the natural beauty and unspoiled environment of Lake Louise? In fact, such access would be denied everyone for the natural beauty and unspoiled environment of Lake Louise would no longer exist. Furthermore, special access privileges would be provided only to those who could afford them. A visitors centre outside the park would, in contrast, provide equal access for everyone to the unspoiled, and perhaps restored environment if the present Chateau is removed from the Lake area.

We can thus ask, could these same benefits (and/or other benefits) be generated elsewhere within the province without incurring similar



cost or losses. If the answer to this question is yes, then we believe that it behoves the Province of Alberta to promote tourism, townsite development, summer resorts and downhill skiing within the province and outside of the national parks. Some of these should be located so as to provide services for park visitors.

If developments were outside of the park and free from park restrictions, then also a greater number of ancillary facilities could be developed as well to provide multiuse recreational areas.

These points rest on two assumptions: (1) that potential high quality ski areas exist in the province along the Great Divide or elsewhere, and (2) that the town of Canmore and Nordegg or other areas could be developed as tourist centres. In our opinion, the provincial government should institute surveys to ascertain the position in these matters as soon as possible.

APPENDIX 7

ENVIRONMENT CONSERVATION AUTHORITY

MEMORANDUM

FROM:

DR. W. R. TROST,  
Chairman,  
Environment Conservation Authority.

TO:

DATE: June 12, 1972.

DR. E. E. BALLANTYNE,  
Deputy Minister,  
Department of the Environment.

Re: Research Priorities for the Alberta Environmental Research Trust

In your memo of May 15th you had asked the Environment Conservation Authority to forward a priority rating of the five top environmental matters in Alberta on which research is required.

We appreciate your thoughtfulness in involving the Authority in this way. We can probably be most helpful if we in turn seek advice from our Public Advisory Committees and from our Science Advisory Committees, and I would suggest that you permit us to update our advice to you annually, at that time most convenient to your own needs.

1. Water management problems including water heds, surplus waters including lakes, deep waters, and exchanges between these including deep burial of toxic waters.
2. Reclamation research, with particular emphasis on problems arising from surface mining.
3. The environmental effects of toxic gases liberated during resource developments, with particular emphasis on sulphur and sulphur-containing compounds.
4. The environmental effects of insecticides, pesticides and hard chemicals.
5. Systems analytical research into the integrated uses of multiple resources.

The attachments give specific examples of the kinds of research the Authority feels is needed under each of the major problem areas listed above.

DR. W. R. TROST,  
Chairman.

Atts.

## 1. WATER MANAGEMENT RESEARCH IN ALBERTA

Water, or lack of it, has in the past, and will continue in the future, to strongly direct the activities of all societies. Settlements in Alberta originally were established on water transportation routes, and persist where adequate water supplies are available for domestic and industrial use. Location of major industries is always contingent on sufficient water supplies of high quality.

Rational planning for future Alberta development must be based on adequate information concerning water; present uses of water must be compatible with future environmental quality. Water management needs can only be documented properly from adequate research programs. Some of the important areas are identified and specific or general research approaches suggested.

### 1. Surface Waters

#### 1.1 Lakes -

Research is required to determine the present status of lake levels and water quality of lakes in relation to natural and man made influences, as well as to identify changes occurring or likely to occur in these surface waters.

#### 1.2 Rivers

Research is needed to identify the influences affecting flows and water quality in river basins and sub-basins; future demands on river basins need estimation and identification in relation to social and economic development patterns in Alberta.

#### 1.3 Groundwaters -

##### 1.3.1 Movement -

Research is required on the movement of groundwater, vertically and horizontally, near the surface, and at great depths. [This area of research is specifically suggested in relation to practices such as waterflood for oil recovery, and deep well disposal of toxic or noxious substances].

##### 1.3.2 Exchange -

Research is needed to elucidate the rates of exchange between surface and groundwater, and to measure the rates at which ionic

constituents of the earth may be brought to the surface, in response to man-made or natural influences.

1.3.3 Sewage Disposal -

Increased research is required into water management methods which may provide alternative means of disposal for wastes associated with domestic or industrial sewage. [Of particular importance is the necessity for accelerating disposal of sewage through dry land irrigation with sewage effluents; this research should be extended from southern Alberta to include northern communities and the two major cities.]

## 2. RECLAMATION RESEARCH NEEDS IN ALBERTA

The Province of Alberta may pass surface conservation legislation in the near future. Under this legislation it may be required of those who disturb the surface for extraction of minerals or for any other purposes, that the surface be reclaimed, in order that its original productivity not be impaired. Legislative requirements likely will be based on the strong public consensus that land should not be destroyed, but rather should be returned to a usable state after it has been torn up. On the other hand, very little reclamation has been done in Alberta, whether on the prairies, in the foothills or in the mountains. Each of these areas will have its own problems, plus the fact that each will require a solid body of evidence upon which to base reclamation efforts.

The mechanics of surface mining on the prairies appears to be relatively straight forward and predictable, as is apparently, reclamation of stripped areas. However, important problems, such as subsidence of restored surfaces, drainage and alkalinity still remain. As a consequence, the long range effects of severe surface disturbances may still be partly unpredictable, even when apparently satisfactory surface reclamation procedures are followed.

Evidence does not appear to be available as to the physical and chemical effects of disturbance on sub-surface materials, transposed from a reducing to an oxidizing environment. At least three separate areas of research are required in order to elucidate the consequences of disturbing surface and sub-surface materials. Research programs concerning these are recommended as follows:

1. Research is required concerning the physical and chemical changes which may occur in exposed soils or rocks following disturbances of surface mining.
2. Increased research is required on the factors affecting horizontal and vertical movement of ground water and the changes in its ionic constituents, following surface disturbance and reclamation.
3. Research is required on the factors affecting potential for re-vegetation of reclaimed land.

Many problems exist which relate to reclamation in the several regions of the Province, and which require research to establish and elucidate relevant and important facts. Examples of some of these problems are surface subsidence, species selection and adaptation, and soil rehabilitation.

1. Research is needed on the physical characteristics of various substrates, in order that land surface levels can be predicted with accuracy, following stripping, removal of coal or other substances and surface reclamation.
2. Research is required to determine species suitability for re-vegetating any area in the Province where surface disturbance has occurred.
3. Research in soil chemistry and microbiology is required to provide information which can assist in achieving soil rehabilitation, if this is required.

Even where research has provided information which scientists require, the question of application of this knowledge remains. It is essential that reclamation research and technology be tied as closely as possible together. It is essential also that well qualified people be employed in every phase of reclamation from first removal and segregation of top soil, to physical restoration of the surface, and finally, to replanting and re-vegetation for subsequent management of the site.

In order to accomplish the objectives outlined above, the following recommendations are made:

1. Reclamation research projects should be planned and undertaken jointly by the Federal and Provincial Governments and by industry in co-operation with the Universities, to establish the basic information that is needed to guide reclamation practices.
2. Some of the old, poorly reclaimed surface mine sites, in the mountains, foothills and prairies, should be acquired by the government, and used as training sites and experimental areas for reclamation research and reclamation technology training.
3. A reclamation manual should be prepared and published that describes the best procedures known as to reclamation of strip mining sites on the prairies as well as reclamation

of surface mining sites in the foothills and mountains. This manual should be based on research information available for the Province of Alberta, as well as information from elsewhere which may also be applicable. The reclamation manual should be up-dated annually or at regular intervals as technology improves and as research reveals new information.

4. Based on reclamation research carried out in Alberta, training programs and reclamation technology should be initiated at technological institutes or vocational schools, so that training can be given to individuals, including heavy equipment operators who might be employed in reclamation work.



### 3. GASEOUS EFFLUENT RESEARCH IN ALBERTA

Research is needed into the identification and effects of the gasses which may be released as a result of resource development in Alberta.

The extraction, transportation and processing of sour gas can liberate hydrocarbon gasses as well as elemental sulfur dusts and a variety of toxic sulfur bearing compounds. The instantaneous as well as the cumulative effects of these on plants, animals, the soil and man and his property, should be established and related to the range of concentrations that can occur in ambient air in the vicinity of these plants.

Hydrocarbon and other chemical gasses or vapors that are emitted as a result of crude oil refining and the use of the products in internal combustion engines, stationary furnaces, as cleaning solvents or in paint, insecticide, wood preservative or other formulations should be studied and their qualitative and quantitative effects determined.

The combined or synergistic effects of these various gasses and the oxides of carbon and nitrogen which normally accompany the combustion of fuels should be studied under Alberta conditions and the local hazards from their interaction assessed.

Most importantly the cause effect relationship between a known source of gaseous emission and its receptors should be clearly established wherever possible.

Two situations are relevant.

1. The isolated single installation located in a rural area and emitting one or only a few readily identifiable gasses.
2. The "urban" situation where a number of plants co-exist and a wide variety of pollutants emerge to intermingle and react in the atmosphere. Both the combined effect of the individual gasses and the specific effects of the products of interaction must be considered.

Research is needed for the Alberta situation in specific areas as follows: -

## 1. Coal Extraction.

- 1.1 What are the gasses or other emissions liberated from coal processing plants and what are their effects on man, animals, plants, property?
- 1.2 What is the fate of these emissions in the atmosphere?
- 1.3 What range of concentrations are involved and what are the "safe" limits for long range exposure?

## 2. Gas Extraction

### 2.1 Gathering Systems

What gasses are emitted at the well heads and within the gathering systems prior to delivery of the gas to the plant. What quantities are involved. What are the resulting ranges of concentration in the atmosphere?

### 2.2 Gas Plants

What are the long range effects of low concentrations of sulfur bearing gasses on man, animals, plants and property?

- 2.2.1 What is the fate of these sulfur compounds after liberation to the atmosphere under Alberta conditions in:

- a) Summer?
- b) Winter?

### 2.3 Transportation and Distribution

- 2.3.1 What gasses are liberated from transportation, distribution, compression, and storage installations? What ranges of concentration are involved. What are the cumulative effects of prolonged exposure to low levels of Mercaptans?

### 2.4 Cause Effect Relationships.

It is most desirable to identify specific observable effects or symptoms on receptors such as plants, animals, ferrous or other metal objects, protective coatings, etc. which can be positively related to the presence of specific gasses in certain concentrations.

## 3. Oil

- 3.1 What is the nature and quantity of the gasses which are liberated at oil well sites? What concentrations are produced in the atmosphere?

3.2 What is the nature and quantity of gaseous emissions from petroleum refineries? What gasses, dusts, etc., not native to the petroleum raw material but used as auxiliary chemicals in the refinery can be liberated into the air?

a) In regular small quantities?

b) In large quantities during upsets?

What are their immediate and long range effects on their various receptors? What is their fate in the atmosphere under Alberta conditions?

3.3 What specific gaseous emissions are peculiar to the tar sands, and their processing plants?

What are the short and long range effects of these on their various receptors?

What limits of concentration are appropriate for Alberta conditions?

#### 4. Secondary Processing

What are the gaseous emissions from secondary processing plants?

4.1 Thermal Power plants fired by coal?

4.2 Thermal Power plants fueled by natural gas?

4.3 Petrochemical Plants

4.3.1 Polyolefine

4.3.2 Fertilizer

4.3.3 Oxygenated Hydrocarbons

4.3.4 Synthetic Resin

4.3.5 Wood Preservative

4.3.6 Lubricant recovery

4.3.7 Formulations using hydrocarbon solvents such as insecticides, weedicides, etc.

4.3.8 Dry cleaning plants.

#### 5. Monitoring and Measurement

Research should be continually devoted to the development of more sensitive, precise and speedy methods of identifying and measuring the concentration of materials in the atmosphere at very low concentrations of 1 p.p.b. or less.

#### 4. RESEARCH REQUIREMENTS INTO THE ENVIRONMENTAL EFFECTS OF PESTICIDES, FERTILIZERS AND HARD CHEMICALS

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Mankind has continually strived to increase the productivity of the soil and decrease crop losses resulting from disease and pestilence. Recently the main thrust of our efforts has been the increasing use of commercially-produced fertilizers and pesticides. Alberta, with a strong agricultural economy, has reaped the benefit from this technology as well as some of the problems.

A comprehensive research program is needed on the ecological and toxicological effects of fertilizers and pesticides in Alberta. Such a program is necessary to prevent lethal accumulations of substances in organisms and chronic poisoning of various ecosystems. Results from laboratory studies need to be subjected to rigorous field trials and experiments to assess the various biological and chemical reactions in the natural environment. Since many subtle ecological effects only become evident over a period of time the research program must be a continuous and long-term effort.

Following are some general areas of immediate concern although the list is not intended to be all-inclusive with respect to research needs.

##### I. Inventory

A prerequisite to any Province-wide research program is a documentation of the extent and nature of the use of fertilizers and pesticides in Alberta. Such a documentation could include:

- a) chemicals that have been used in Alberta, where they were applied, dosages, methods of application;
- b) the target organisms and effective dosages;
- c) present background levels in the environment.

## II. Toxicology

The basis for establishing dosage rates and the effects to various organisms need to be broadened to include standards based on field trials and in situ experiments. Some general areas needing research are:

- a) criteria used to establish safe dosages;
- b) effect of "no-effect dosages" (chronic effects);
- c) synergistic effects;
- d) effects of conversion products within an organism.

## III. Ecological Effects

The biological effects of various fertilizers and pesticides must include their reaction with entire ecosystems, not merely the target organism. Three general areas needing research are:

- a) effectiveness
  - effect on target organism
  - development of resistance in target organism
  - effective dosage required
  - effect on non-target organism.
- b) persistence
  - accumulation of compound in the environment
  - accumulation and toxicity of breakdown products
  - movement between organisms
  - effects on soil and water microenvironments
- c) alternatives
  - agricultural practices
  - biological control
  - genetic manipulation.

## 5. RESEARCH REQUIREMENTS INTO THE ENVIRONMENTAL CONFLICTS OF MULTIPLE RESOURCE USE MANAGEMENT

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There are many problems associated with the allocation, coordination and optimization of various uses of a given land resource. Present and projected conflicts make it imperative to develop sound multiple use practices based on research and planning.

There is little agreement even on philosophical terms about the meaning of multiple use. Regardless of the approach to the problem, however, it is certain that we need to have some idea of the nature and extent of our resources. There are efforts being made to establish such a resource "data bank" although it must be more comprehensive in terms of area and data. Follow-up work is required in zoning the Province on the basis of the documented resource data.

Research is required on bio-physical standards for land classification as a basis for comparing non-renewable resource extraction with other uses. The idea of a temporal rotation of uses as well as a spatial separation needs to be developed. The incompatibility of various resource uses must be resolved so that the more important uses have priority.

The standards used to determine prime uses for an area need to be refined to take into account society's changing values. Social as well as economic cost-benefit analysis are required before areas are committed to prime uses. Minimum standards for less important uses must be established; prime use must not imply "only" use.

Imaginative approaches are required to develop analytical techniques which will be flexible enough to serve as policy guidelines for planning but be specific enough to be applicable in particular areas of conflict. Field techniques are needed whereby the environmental impact of one use is either minimized or made attractive for other uses.

In summary, research is required to lay the basis for innovative approaches and initiation of new techniques of resource allocation. Of particular importance is the need for research into data retrieval methodology, where descriptive categorization of land parcels can be converted to mathematical categories, easily accessible to the resource manager, and useable in mathematical models in a non-subjective manner.

## APPENDIX A

### RECOMMENDATIONS OF THE CO-ORDINATING COMMITTEE OF THE PUBLIC ADVISORY COMMITTEE ON THE ENVIRONMENT.

Research supported by the Alberta Environmental Trust should be particularly oriented to Alberta conditions with due consideration for the likelihood of similar problems being studied elsewhere.

Our six recommendations are as follows:

1. Unique aspects of atmospheric pollution in Edmonton and Calgary including characteristic meteorology, urban models and ice fog.
2. A comprehensive benefit-cost analysis of a representative mining development in the Foothills of Alberta. (It is recommended that Grand Cache be used as a pilot project).
3. Optimal size of forest utilization leases for maximum returns to the Provincial economy. Forest utilization leases would include pulpwood, timber, grazing and others.
4. Development of objective criteria for preserving natural areas in Alberta, in relation to ecological diversity and human population, size, distribution and expectations.
5. A survey of current practice in both formal and informal environmental education in Alberta with a view to identifying future issues, problems and priorities.
6. A systems analysis and energy flow study as it applies to the re-utilization of waste materials in Alberta and specifically the beverage container in Alberta.



APPENDIX 8

ENVIRONMENT CONSERVATION AUTHORITY

MEMORANDUM

FROM: DR. W.R. TROST,  
Chairman,  
Environment Conservation Authority.

TO: HONOURABLE W.J. YURKO,  
Minister,  
Department of the Environment.

DATE: June 9, 1972.

Re: Recreational Use of Alberta Lakes

The attention of the Authority was drawn to figures published by the Alberta Government showing visitors to National Parks in Alberta, and visitors to Provincial Parks in Alberta including lakes and beaches there. The following figures seem to be significant.

The number of visitors to National Parks in Alberta went up from 4,407,878 in 1970 to 4,699,837 in 1971. The visitors to Provincial Parks in Alberta went down from 5,206,777 in 1970 to 4,832,246 in 1971. Within these Provincial Parks, the visitors to Aspen Beach, Miquelon Lake and Wabamun Lake alone went down from 1,564,557 in 1970 to 829,099 in 1971.

These figures mean that attendance at Aspen Beach, Miquelon Lake and Wabamun Lake fell by nearly 750,000 people or by nearly 50%. The fall in attendance at all Provincial Parks in Alberta was about 370,000, and when allowance is made for the drop in the use of the three lakes, attendance in the remaining Provincial Parks rose by 380,000.

In the course of its hearings on Cooking and Hastings Lakes and its subsequent studies on the qualities of lake waters in Alberta, the Authority received many qualitative intimations that conditions were far from satisfactory in our recreational lakes. These quantitative data seem to underline and emphasize and give precision to the magnitude of the public dissatisfaction.

W R Trost

DR. W.R. TROST,  
Chairman

cc: Hon. P. Lougheed  
Hon. R. Dowling

VISITORS TO NATIONAL PARKS IN ALBERTA BY MONTH - 1970 & 1971

Month	Banff		Elk Island		Jasper		Waterton Lakes		Total
	1970	1971	1970	1971	1970	1971	1970	1971	
January	88,225	86,090	5,089	2,956	20,566	20,986	- -	113,940	109,972
February	107,390	106,850	6,950	5,970	21,803	24,399	- -	136,143	137,212
March	144,577	121,142	7,504	7,648	46,013	32,600	- -	198,094	162,390
April	123,223	186,851	13,065	14,867	40,651	76,159	4,023	180,962	281,537
May	189,585	193,032	42,344	43,613	85,021	86,433	53,660	370,610	380,454
June	234,968	233,111	63,405	45,134	145,230	152,276	84,864	528,467	523,227
July	473,511	540,544	52,904	67,463	362,490	385,984	182,513	1,071,418	1,173,642
August	430,646	424,525	65,683	74,126	352,984	343,260	164,233	1,013,546	1,012,576
September	194,990	208,863	26,391	24,057	109,288	119,042	31,028	361,697	397,073
October	127,484	150,398	13,471	19,632	48,381	61,499	- -	189,336	231,522
November	70,420	100,641	5,370	4,754	20,920	24,919	- -	96,710	130,204
December	112,196	113,869	2,808	3,580	31,951	38,047	- -	146,955	155,377
TOTAL	2,297,275	2,465,856	304,984	313,800	1,285,298	1,365,604	520,321	4,407,678	4,617,777

Source: National Parks Division,  
Department of Indian Affairs and Northern Development.

## ATTENDANCE RECORDS ALBERTA PROVINCIAL PARKS, 1961-1971

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Can Beach	410,232	403,430	514,168	454,995	360,825	566,535	516,620	433,418	478,116	666,658	296,591
Swains Lake	16,540	20,135	29,840	20,421	30,756	52,434	57,751	62,084	48,564	76,696	65,056
Hill Springs	9,750	12,173	12,350	14,063	30,452	32,414	50,386	48,758	55,907	58,199	51,517
Knife	-	-	-	22,987	25,581	32,750	29,478	34,122	33,315	25,185	38,097
Valley	-	35,500	124,042	48,860	83,108	159,087	218,111	246,012	165,239	87,710	70,571
Big Creek	-	-	-	-	6,988	28,854	37,658	58,906	79,813	80,620	106,545
Pin Lakes	-	-	-	-	-	-	-	18,361	145,098	139,248	126,899
Arden Lake	79,250	55,232	119,158	67,581	74,668	71,745	76,566	117,258	144,560	159,308	153,375
Des Lake	6,267	4,947	12,746	14,794	17,250	19,923	32,115	25,701	30,611	32,808	32,102
Grass Hills	196,000	221,000	457,000	289,900	588,770	690,439	559,812	603,858	685,723	710,493	661,211
Henry Lake	36,993	14,926	6,073	15,674	12,784	11,593	18,533	23,878	29,593	71,457	83,659
Mountain	5,917	8,190	12,000	15,292	17,400	29,049	35,824	50,769	53,089	37,201	42,916
Prof. Buffalo Jump	-	-	-	-	-	-	-	-	-	-	4,959
Trance	5,123	2,034	3,720	7,590	14,804	11,779	22,511	9,949	8,621	38,425	43,209
Werner Lake	24,603	19,496	38,544	25,956	41,121	46,339	50,981	51,287	66,615	79,501	124,822
Wesberry Lake	13,300	22,083	15,321	16,882	30,139	35,127	73,846	46,898	60,805	55,790	51,041
Wes	-	-	-	-	-	-	-	-	-	-	1,075
Brook Island	35,040	33,400	38,290	54,039	77,782	90,170	84,276	86,484	114,620	126,135	219,111
Cardinal	29,148	15,240	21,973	17,409	24,400	35,056	44,268	35,832	34,077	19,299	28,109
Ele Fow	26,160	27,945	42,830	48,440	45,320	50,128	57,377	60,328	69,484	96,880	112,480
Ele Fish Lake	5,400	5,500	7,800	2,314	9,889	15,227	12,509	10,825	13,162	13,270	17,087
Ele	15,084	24,132	34,295	34,566	39,514	44,901	66,443	57,026	73,881	122,275	135,825

Loc	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Mc-O Beach	32,900	11,519	15,541	18,159	21,779	43,053	37,894	28,843	47,487	49,320	32,222
Quelon Lake	42,047	41,032	76,050	114,091	121,646	183,836	212,652	339,523	470,727	496,121	255,155
Quasine Lake	8,136	15,118	27,442	9,966	25,455	26,921	31,612	26,892	26,948	44,388	60,427
Rose Lake	-	-	-	-	-	-	-	-	-	-	1,022
Drien	5,550	7,850	36,155	21,885	37,690	39,576	35,525	30,721	47,117	43,408	65,202
Rk Lake	106,440	113,130	159,210	128,662	160,532	191,075	204,707	122,710	284,428	361,471	370,154
Robina River	32,610	46,763	61,330	51,196	43,865	54,251	66,358	69,090	73,582	70,479	111,425
Rlice Outpost	-	-	-	-	-	-	-	-	-	-	27,215
id Lodge	65,280	65,966	50,058	84,277	34,590	56,556	148,322	94,841	91,076	147,808	157,444
John Sands	42,500	24,750	63,887	76,098	65,444	82,706	105,097	84,671	109,479	114,544	167,222
Skatoon Island	28,691	16,805	34,395	23,850	66,595	59,644	115,341	61,014	90,581	95,543	85,142
St Winston Churchill	-	-	-	-	-	-	-	-	24,414	37,769	42,212
ber	36,120	32,875	34,840	29,231	31,169	39,083	48,404	54,872	73,322	58,388	82,342
se Vermilion	63,800	119,275	112,258	110,190	114,412	123,022	123,123	154,192	162,368	196,663	192,621
Under Lake	8,875	15,032	34,468	54,411	78,963	97,806	91,961	98,787	71,489	93,524	87,461
Wlebrook Campsite	-	-	-	-	-	-	-	-	-	20,738	57,822
Wamun Lake	102,440	202,776	170,550	262,146	239,575	333,990	512,976	302,680	339,092	401,778	272,111
Williamson	-	9,269	26,113	32,326	82,942	96,797	136,706	92,596	97,618	84,733	82,414
Wlow Creek	4,400	3,550	3,450	4,660	11,094	19,935	32,884	35,291	42,764	47,883	51,222
Wegami Lake	27,315	37,570	57,668	36,402	71,246	71,285	88,175	81,219	74,565	50,557	69,226
Wolford	10,850	14,040	15,430	4,850	6,062	13,541	23,216	20,628	14,935	34,743	31,752
Witing-On-Stone	15,070	19,789	16,840	15,552	21,458	18,462	21,434	23,890	24,040	28,751	31,512
	1,547,831	1,722,472	2,435,825	2,249,719	2,762,068	3,575,139	4,081,452	3,804,214	4,556,930	5,106,777	4,831,225

Source: Parks Branch  
Alberta Department of Lands and Forests

ATTENDANCE RECORDS AT ALBERTA PROVINCIAL PARKS, BY MONTH, 1970 & 1971

<u>Month</u>	<u>1970</u>	<u>1971</u>
January	48,882	53,776
February	77,071	57,921
March	67,119	61,752
April	98,216	96,698
May	562,712	601,389
June	1,094,062	780,426
July	1,453,575	1,387,565
August	1,270,749	1,275,670
September	294,325	315,168
October	111,891	123,751
November	55,788	46,065
December	45,713	32,065

Source:  
Parks Branch,  
Alberta Department of Lands & Forests.

Tent Trailer Registrations at Provincial Parks in Alberta, 1965 - 1971

<u>Year</u>	<u>Tents</u>	<u>Trailers</u>	<u>Total</u>
1965	25,841	22,579	48,420
1966	32,178	38,795	70,973
1967	41,616	59,334	100,950
1968	29,772	56,883	86,655
1969	30,493	79,172	109,665
1971	40,683	97,992	138,675

Source: Provincial Parks Division, Department of Lands  
and Forests

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Camper Party Nights at the National Parks in Alberta, 1968 - 1969

<u>Year</u>	<u>Banff</u>	<u>Elk Island</u>	<u>Jasper</u>	<u>Waterton Lake</u>	<u>Total</u>
1968	151,048	4,553	76,010	28,222	259,833
1969	163,599	4,402	99,057	28,149	295,207

Source: National Parks Branch, Department of Indian & Northern Affairs

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# VISITORS TO NATIONAL PARKS IN ALBERTA, 1960 - 1971

<u>Year</u>	<u>Banff</u>	<u>Elk Island</u>	<u>Jasper</u>	<u>Waterton Lakes</u>	<u>Total</u>
1960	1,016,775	191,341	354,179	349,496	1,911,791
1961	1,050,895	193,254	354,099	420,865	2,019,113
1962	1,282,418	174,360	354,390	444,752	2,255,920
1963	1,551,001	209,319	427,598	441,803	2,629,721
1964	1,592,140	176,433	444,406	371,258	2,584,237
1965	1,705,010	195,947	481,456	393,425	2,775,838
1966	1,966,365	206,658	551,803	487,589	3,212,415
1967	2,038,328	224,139	605,271	503,729	3,371,467
1968	2,136,832	279,451	789,239	516,112	3,721,634
1969	2,239,016	302,833	1,056,997	472,850	4,071,696
1970	2,297,275	304,984	1,285,298	520,321	4,407,878
1971	2,465,856	313,800	1,365,604	554,627	4,699,887

## INDEX NUMBER OF VISITORS TO NATIONAL PARKS IN ALBERTA, 1960 - 1971

1960 = 100.0

<u>Year</u>	<u>Banff</u>	<u>Elk Island</u>	<u>Jasper</u>	<u>Waterton Lakes</u>	<u>Total</u>
1960	100.0	100.0	100.0	100.0	100.0
1961	103.4	101.0	100.0	120.4	105.6
1962	126.1	91.1	100.1	127.3	118.0
1963	152.5	109.4	120.8	126.4	137.6
1964	156.6	92.2	125.5	106.2	135.2
1965	167.7	102.4	136.0	112.6	145.2
1966	193.4	108.0	155.8	139.5	168.0
1967	200.5	117.1	170.9	144.1	176.4
1968°	210.2	146.0	222.9	147.7	194.7
1969	220.2	158.3	298.4	135.3	213.0
1970	225.9	159.4	362.9	148.9	230.6
1971	242.5	164.0	385.6	158.7	245.8

Source: National Parks Division

° 1968 figures are preliminary and subject to change















